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SELECTIONS FROM THE RECORDS OF THE BOMBAY GOVERNMENT.

No. CCLXIII.—New Series.

PAPERS AND EXTRACTS

BEARING ON THE SUBJECT OF

SUBSOIL WATER CLASSIFICATION

IN

GUJARAT.

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Bombay:
PRINTED AT THE GOVERNMENT CENTRAL PRESS.

1892.

[Price—11 Annas.]

BOMBAY BRANCH
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SECTION I.

Revenue Survey and Assessment.

No. 1028.

REVENUE DEPARTMENT.

Bombay Castle, 25th February 1874.

RESOLUTION.—Colonel Anderson requests that the orders of Government in respect to the revision of the assessment on lands irrigated from wells may be re-considered. He objects to them as involving a needless sacrifice of public revenue.

2. Those orders are—

1. That in the case of old wells contructed before the first settlement in dry and arid districts, all special water assessment should be abandoned, and the maximum jiráyat rate alone levied.

2. That in the case of new wells constructed subsequent to the first settlement the ordinary dry-crop rate should be imposed without any addition whatever on account of the new wells.

3. The question has now been very fully discussed. His Excellency the Governor in Council has no hesitation in re-affirming the second order which has been approved of by the Secretary of State, which has already been productive of good results in encouraging the construction of new wells and which is based on the broad and liberal principle laid down in Section XXX of the Survey Act, namely that improvements made during the currency of a settlement are not to be taxed.

4. The opinions that have been elicited during the course of the present correspondence, convince Government as to the policy and expediency of the first rule. It was intended in the first instance to be applicable to the drier tálukás of the Deccan Collectorates, where the rainfall is, as a rule, light and uncertain. His Excellency the Governor in Council is now pleased to decide that it should be generally adopted in the Deccan and Southern Marátha Country, but that the Survey Commissioners should at their discretion, be empowered, in the case of districts where well irrigation has been carried on on an extensive scale, to impose an assessment which should in no case exceed a well assessment previously levied.

5. Budkis of permanent construction are to be treated as wells. There is no objection to the plan which Colonel Anderson states he has adopted of classing at a higher rate land within a certain distance from a stream from which water can be obtained by means of a budki. The same principle may be adopted in the case of land which is found to derive benefit from its proximity to a tank. This should form part of the regular process of classification, in order that it may be tested by the Classing Assistants in the same manner as other classification returns.

E. JAMES,
For Chief Secretary to Government.

Extract paragraph 12 of Government Resolution No. 3107, dated 11th May 1882, passing orders on the original Survey Settlement of the Jhálod Táluka of the Panch Maháls District.

12. The Commissioner, N. D., states that he does not understand whether the double rate proposed on land under wells and water-lifts is on land actually under irrigation at present, or is intended to be assessed on all lands irrigable from existing wells and water-lifts, and that he would prefer to the special rate a small additional rate on all land when water is obtainable, say, 25 feet below the surface. It is clear from Statement C, appended to Mr. Beyts' report, that the double rate is proposed to be confined to the land actually irrigated. The principle, however, laid down in Government Resolution No. 1028, dated 25th February 1874, that land which has facility for irrigation should be classed at a higher rate than land which has not, in lieu of imposing a special rate on lands actually irrigated, might, in the opinion of His Excellency in Council, have been acted on with advantage in the case of the settlement now proposed, and Mr. Stewart should be requested to consider whether it cannot be carried out before the expiry of the two years for which the rates are now sanctioned.

No. 2082 OF 1882.

To

THE SECRETARY TO GOVERNMENT,
REVENUE DEPARTMENT.

Poona, 20th October 1882.

SIR,

With reference to paragraph 12 of Government Resolution in the Revenue Department, No. 3107, dated 11th May last, I have the honour to state that I have made arrangements for the classification of lands in the Jhálod and Dohad Tálukas of the Panch Maháls in respect to the facilities they possess for irrigation with a view to the abandonment, at the expiration of the two years for which the present settlement has been sanctioned, of the special rate on lands actually irrigated. The classification will be carried out by the small body of classers kept up under Mr. Bulkley during the ensuing fair season, and I would request the sanction of Government to extend the system of classification for possession of water advantages to the Dohad Táluka also, the rates for which will fall in at the same time and for which a renewed guarantee will have to be given. The circumstances of Dohad are precisely similar to those of Jhálod and the same system should be applied to both. The opportunity of having the work done next season should not be lost, as the following year there will be full work for the classers in the revision survey of Dholka, which is the first Gujarát Táluka in which a revision of rates will become due after a full period of settlement.

2. I have discussed very carefully with Mr. Bulkley, the Assistant Settlement Officer, the question of the system of classification to be pursued, and with his assistance have drawn up a short code of rules a copy of which is forwarded for the perusal of Government. These rules will be tentatively applied to Dohad and Jhálod with Government approval, and when altered and modified by the light of actual experience in the field will form a guide to the system to be adopted in the province of Gujarát generally.

3. I would only point out with regard to the rules that the anna valuation applied to each class is not intended to be a fixed one. It is only to show the relative values of the classes. It will depend upon circumstances, such as the amount of the special water rates which are abandoned in the táluka, what the maximum anna valuation will be, and the general object to be aimed at is the

distribution of the abandoned revenue over the whole irrigable area in such small proportions as to be scarcely felt as an additional burden by individual occupants. A small extra valuation is proposed for lands having facilities for irrigation by water-lifts (dhekudis), as the water is available in such cases with greater ease and less expense.

I have the honour to be,
Sir,
Your most obedient Servant,
T. H. STEWART,
Survey and Settlement Commissioner.

Rules for the Classification of Lands with facilities for irrigation in the tálukas of Jhálod and Dohad, Panch Maháls.

1. Lands having facilities for irrigation are those tracts which lie low and are situated on and also inland from the banks of streams, and which have built or unbuilt wells sunk in them, and use or can use the water of streams by means of *dhekudis* and thereby irrigate or can irrigate larger or smaller areas for crops of wheat, gram, onions, and occasionally sugarcane. Such a tract may now and then be met with at a considerable distance from any stream, and apparently independent of a stream for the presence of water below the surface at a moderate depth. Even though in a tract of any of the kinds specified no *dhekudis* have yet been used and no wells have yet been sunk and no irrigated crops have yet been raised, yet, if it appears (judging from the lie and level of the land and the nature of the soil) that *dhekudis* can be used and wells for irrigation can be sunk with more or less probability of water being got at depths not exceeding thirty feet, such tract must be considered to have facilities for irrigation and the survey numbers in it classed according to the rules which follow and the scales drawn up.

2. Streams which afford facilities for irrigation by *dhekudis* are of three orders of merit—No. 1, No. 2, and No. 3—according to the subjoined definitions :—

(*a*)—A No. 1 stream is one which holds a supply of water up to nearly the close of the hot weather, and on whose banks *dhekudis* are worked or have been worked wherever generally practicable.

(*b*)—A No. 2 stream is one which holds a moderate supply of water up to the usual latest period of irrigating wheat, barley, onions, &c., but on whose banks no *dhekudis* have yet been worked, at the pleasure of the cultivators of the lands bordering on the stream.

(*c*)—A No. 3 stream is one which holds water very little beyond the monsoon, and that to a very limited extent, and along whose banks *dhekudis* are few and far between.

In the case of lands under a stream of order No. 1, the additional annas imposable on a survey number without an existing *dhekudi* shall be no less than those imposed on a survey number with one.

In the case of lands on and adjacent to a stream of order No. 2 the additional annas to be imposed shall be alike on all survey numbers within the same distance from the stream.

In the case of lands under and adjacent to a stream of order No. 3 those survey numbers that have no *dhekudis* shall not be entered and classed as under *dhekudis*, but as under wells, and shall have the additional annas imposable on them fixed as for survey numbers lying beyond twenty chains from the stream, according to the scale for well advantages applicable to the tract in which they are situated.

3. Where, in the case of a stream capable of working *dhekudis*, the land* along its banks slopes up from and lies considerably higher at its highest part than the edge of

* Supply "of a survey number."

the bank, so that an embankment (to serve as a channel) raised up to 5 feet at the most needs to be constructed at the mouth of the *dhekudi* and taken inland to the highest level before the land can be irrigated, the additional annas to be imposed must be those fixed in the scale for lands at the height of the highest portion of the survey number, for so much of the area as lies higher than the level of the bank. Thus, in the case of a survey number of 4 acres, should 2 acres be on one level of (say) 14 feet at the bank, and the remaining 2 acres slope up to a maximum of 19 feet (14+5), the additional annas to be imposed on the 2 acres which lie higher and to reach which a raised channel for the water has to be constructed, must be less than those imposed on the portion of the number which lies lower, and, in the case given, would be according to the scale for lands in the next lower class, *viz.*, B.

4. In the case of lands in the neighbourhood of tanks which hold water beyond the end of December in which *kacha* or *pakka* wells are or can be dug, the additional annas to be imposed shall be the same as those for survey numbers within 20 chains of a stream capable of working *dhekudis*.

5. In the case of a stream on the banks of which it is not practicable in any place to work a *dhekudi* because the channel near the bank is rocky and the difficulty of getting the water is great, but in the lands lying on and along whose banks *kacha* and *pakka* wells are or can be sunk within 20 chains from the stream, on all such lands the annas to be imposed shall be those according to the scale for lands under wells according to the nature of the tract in which they are situated and the class in which their depth to water places them.

6. In the case of portions of land within a tract bordering on a stream over which the water cannot be taken by *dhekudis* on account of their high level above the bank, but in which *kacha* and *pakka* wells are or can be sunk, the additional annas to be imposed must be fixed according to the class in the scale for lands under wells.

7. In the case of lands on or along the banks of a stream which are so stony or otherwise unfit for growing irrigated crops that *kacha* wells have not been and are not likely in future to be sunk for irrigation purposes, or are so uneven in surface that even if wells were to be sunk they would be useless for irrigation, no additional annas are to be imposed.

8. In the case of a tract of land in a village in which *kacha* or *pakka* wells are numerous and regular, and in which water has been got, or, should new wells be dug, can with all reasonable certainty be got, without meeting with solid rock, the same additional annas imposable on those survey numbers with wells must be imposed on those without wells. Such a tract shall be considered as of order No. I, and the lands in it shall be recorded, according to their respective depths to water, $\frac{I}{A}$, $\frac{I}{B}$, $\frac{I}{C}$, as the case may be.

9. In the case of a tract of land in which as yet no wells have been sunk for irrigation purposes, but in which one or two small wells may have been dug for drinking purposes, and it is apparent that water can be got without encountering solid rock, and the only or chief reason for wells not being sunk for irrigation is the indifference of the cultivators, such a tract shall be considered as of order No. II, and the lands in it shall be recorded, according to their depths to water, as $\frac{II}{A}$, $\frac{II}{B}$, $\frac{II}{C}$, as the case may be.

The same additional annas imposable on survey numbers in which wells for drinking purposes exist, must be imposed on those in which as yet no wells (for any purpose) have been dug.

10. In the case of a tract in which only a very few wells relatively to its area exist, and they are either at great distances apart or in only one small space of that area, while in the remaining area there are either no wells or only the signs of wells formerly attempted to be sunk but left unfinished owing to solid rock being encountered and very little or no water being got, such a tract shall be considered as of order No. III, and the lands in it be recorded, according to their depth to water, as $\frac{III}{A}$, $\frac{III}{B}$, $\frac{III}{C}$, as the case may be. As the additional annas imposable on numbers that have no wells or only abandoned wells are less

than those on numbers with wells working, it is necessary to distinguish each kind in the classers' field-books and survey registers by marks: Accordingly, numbers *with* wells will, according to their depths, be recorded as $\frac{III}{A,1}$ $\frac{III}{B,1}$ $\frac{III}{C,1}$ and those *without* wells as $\frac{III}{A,2}$ $\frac{III}{B,2}$ $\frac{III}{C,2}$, as the case may be.

11. In the case of a tract of land within the limits of one village which lies separated by a stream from a tract in the limits of another village which is in outward appearance similar, but has no wells in it, whereas the former tract has many wells in it at work, and the reason given by the people for the absence of irrigation by wells is the existence of solid rock at depths more or less shallow which must be dug through before water can be got, and then probably in small quantity, and this reason is confirmed to some extent by the existence of excavations for wells that have been abandoned and never worked, or of a well in the tract sunk by Government (for the use of the village) at great expense through the solid rock, the water advantages of such a tract must be valued the same as those of a tract (No. III) described in Rule 10, and the survey numbers in it must be treated in the same way as regards imposing the additional annas.

12. Where the surface of a survey number which is liable to the imposing of additional annas under the scale for lands under wells is not uniformly level so that the additional annas imposable on one portion of the area would be those of class A of the scale, and those of another portion would come into class B, or C, shares must be taken by the classer (as is done for soil classification) according to the estimated area of each portion on a different level and the average additional annas to be imposed on the whole number fixed accordingly. This applies to the case of survey numbers held by one occupant only. Where more than one occupancy is included in a survey number, the land of each must be treated separately and its additional imposable annas determined according to its individual position and level above the stream or depth from surface at which water is or can be got in a well.

13. Wherever a rice land survey number is met with in any such tract, it must be treated according to the rules applicable to a jiráyat or bágáyat number in that tract. But where the classification annas for water advantages are already the highest imposable for rain and tank supply combined, *viz.*, 24 annas, no additional annas on account of either *dhekudi* or well supply shall be imposed.

14. Should a stream capable of working *dhekudis* border a tract of land of order No. 1, and any survey number on its banks in which no well exists have a *dhekudi* working in it, still such number shall not be considered and classed as *dhekudiat*, but shall be classed as under wells.

Scale for Lands under wells.

Distance of lands from stream.	Class A.				Class B.				Class C.			
	Where the depth at which water is or can be got is											
	Under and up to 14 feet from the surface of the land.				Over 14 feet and up to 22 feet from the surface of the land.				Over 22 feet and up to 30 feet from the surface of the land.			
	Tracts.				Tracts.				Tracts.			
	I	II	III		I	II	III		I	II	III	
			$\frac{III}{1}$	$\frac{III}{2}$			$\frac{III}{1}$	$\frac{III}{2}$			$\frac{III}{1}$	$\frac{III}{2}$
	Additional Annas.				Additional Annas.				Additional Annas.			
Within 20 chains	2	1½	1½	½	1½	1	1	½	1	½	½	...
Beyond 20 chains	1½	1	1	½	1	½	½	...	½	...	...	...

Scale for Lands under Dhekudis.

Distance of lands from stream.	Class A.				Class B.				Class C.			
	Where the depth at which water is or can be got is											
	Under and up to 14 feet from the level of the bank.				Over 14 feet and up to 22 feet from the level of the bank.				Over 22 feet and up to 30 feet from the level of the bank.			
	Streams.				Streams.				Streams.			
	I	II	III		I	II	III		I	II	III	
			1	2			1	2			1	2
	Additional Annas.				Additional Annas.				Additional Annas.			
Within 20 chains... ...	2	1½	1½	...	1½	1	1	...	1	½	½	...
Over 20 chains	1½	1	1	...	1	½	½	...	½	...	...	...

Revenue Survey and Assessment, Panch Maháls.

No. 7937.

Revenue Department.

Bombay Castle, 14th November 1882.

Resolution.—The principle on which the rules have been drawn up appears to be equitable, and sanction is accorded to their introduction into the Jhálod and Dohad Tálukas as an experimental measure, as recommended by the Survey and Settlement Commissioner.

J. MONTEATH,
Acting Under Secretary to Government.

Extract paragraphs 1, 2 and 24 to 34 of Government Resolution No. 2619, dated 26th March 1884.

His Excellency in Council desires in this Resolution to state the principles by which the Government regulates its action in regard to that portion of the produce of land which by custom belongs to the State, that is, to the public, and forms part of the public revenues devoted to the cost of governing the country.

2. The law is contained in the Bombay Land Revenue Code (Act V. of 1879) which repealed and took the place of the Bombay Survey and Settlement Act I of 1865. Under Section 214 of Act V. of 1879 are framed rules for carrying out the purposes of the Act which after publication have the force of law.

24. So far then in this Presidency the conditions on which assessments are enhanced on revision do not affect the value of improvements made by the occupant. The case of these has now to be considered. In other words, what is the effect of clause *b* of Section 107 on the assurance given in Section 106.

25. His Excellency in Council desires to regulate the action of Government in this matter by the broad principle that the occupant of land pays for the use of all advantages inherent in the soil when he pays the assessment on the land. Among inherent advantages he would include subsoil water and rain water impounded on the land, and he would secure to the occupant altogether free of

taxation any increased profit of agriculture obtained by utilizing these advantages through expenditure of labour or capital.

26. His Excellency in Council has no desire to claim any part of such profit for the State either immediately or after a certain term of exemption. There may be provinces where some reservation is necessary, but in the circumstances of Bombay His Excellency in Council is convinced that the material interests of the country will be more truly advanced by laying down a broad principle that the occupant may apply labour and capital to the utilization of all inherent advantages in perfect security that the profits acquired by his labour and capital will never be taxed by the State, than they would by reserving a discretion to tax these profits attended by a feeling of uncertainty when and how they may be taxed. The encouragement of higher cultivation in a fully cultivated province is of infinitely greater public importance than the small prospective increase of the land revenue which may be sacrificed by guaranteeing to the occupant the whole profits of his improvements.

27. This Government has already acted on the broad principle stated above. Wells are the universal and most important means of utilizing inherent advantages. The Government in 1881 issued* a general assurance that Section 107 (*b*) of Act V. of 1879 is not held applicable to wells constructed at the expense of the owner or occupier of the soil in which they are dug. This rule was in fact partially in force (as a rule for guidance in revising assessments) as early as 1871: it was extended to the whole of the Deccan and Southern Marátha Country in 1874: and was made a rule of general application in 1881.

*Government Resolution No. 6682, dated 10th November 1881.

28. It is clear therefore that as regards the commonest form of agricultural improvement the Government has given complete assurance to any occupant who proposes to construct a well, that the increase of profits resulting from it will not be considered as a ground for increasing the assessment on revision. If it is argued that this assurance is not in the terms of the law but in an executive order, on the other hand it is to be remembered that the revision settlements made in subjection to it are unalterable for 30 years. It was also notified in 1881 that if any other kind of improvement is contemplated, Government will decide, at the request of an applicant for an improvement loan, whether Section 107, clause *b*, applies to his project or not. The same assurance can of course be obtained if the improvement is made by means of private capital.

29. These executive orders were promulgated at a time when, according to the custom of preceding rules, old wells existing at the time of the original survey settlements, and in many cases known to be the property of Government, had been subjected to special water assessment. With regard to these it was in 1874 made a rule applicable to the whole of the Deccan and Southern Marátha Country that in the case of old wells constructed before the first settlement all special water assessment should be abandoned, and only the maximum dry-crop rate should be levied. This rule was made of general application in 1881.

30. These rules are important at the present time in connection with operations for revision of the original settlements in the province of Gujarát which are about to be commenced.

31. His Excellency in Council entirely concurs in the soundness of the principle approved by the Government of Bombay in 1866 and 1868 that the assessment by a light rate of the water-producing qualities of the soil is preferable to the system of assessing highly only such lands as are found to be already supplied with wells. In a Resolution, Revenue Department, of March 27, 1868, the views of the Government were thus expressed:—

Resolution, Revenue Department, No. 2110, June 8, 1866.

"In regard to special taxation of wells, it is said with truth that water is, like mineral wealth, fairly taxable by the landlord when used by the tenant. His Excellency in Council however considers that the first principle of its taxation should be that which governs our taxation of the land itself, that is, the capability of being used rather than the use itself. If water of good quality be easily available near the surface, it is more reasonable to tax such land by a light additional rate, whether the water be used or not, than to lay an oppressively heavy tax on those who expend capital and labour in bringing the water into use."

32. Difficulties were experienced in carrying these views into effect, but the hope was expressed that when the time for a revision settlement should come, means might be found for abandoning the special rates imposed on existing wells. The subject has again been under the consideration of Government and sanction has been given to the adoption in the survey settlement of parts of the Panch Mahâls of the plan of taxing subsoil water advantages by a scarcely noticeable increase of the soil rates on the land possessing such advantages, all special water rates being abandoned. The results of this experiment will form a guide for the introduction of a similar reform in the revised settlements of Gujarát.

33. In the Land Improvement Loans Act of 1883, Section 11, it is enacted—

"11. When land is improved with the aid of a loan granted under this Act, the increase in value derived from the improvement shall not be taken into account in revising the assessment of land revenue on the land."

Provided as follows :—

"(1). Where the improvement consists of the reclamation of waste land, or of the irrigation of land assessed at unirrigated rates, the increase may be so taken into account after the expiration of such period as may be fixed by rules to be framed by the Local Government with the approval of the Governor General in Council."

In the debate in Council on this section it was explained that the proviso has regard to such circumstances as those of large tracts in the Punjáb, where there is a very large amount of waste land unoccupied and a very sparse population. The land in its unirrigated state is of very little value and is assessed at about one anna per acre, but as soon as water is brought in, it can be assessed at 14 annas or one rupee per acre. But in districts where the land is fully cultivated and where there is a very small margin of waste and a very full population it was held that the section was properly applicable without the proviso. In Bombay provision is made for bringing land into cultivation under special difficulties and for the reclamation of salt lands by agreements or leases under which the land is given for a certain term rent-free, for a further term at a low rate per acre, and is then assessed like other land adjoining. The land when brought up to the level of ordinary cultivation is thus assessed at the ordinary and not at a special rate in pursuance of a contract with the reclaimer. Except in these special circumstances, land is not in this Presidency assessed below the value of its natural advantages because it is waste, and having regard to the policy stated as to wells, His Excellency in Council sees no probability that improvements consisting of "the irrigation of land assessed at unirrigated rates" will at any period be taken into account in estimating the agricultural profits on which an increase of assessment will be based.

34. His Excellency in Council is led by these remarks to consider whether the three clauses of Section 107 of the Land Revenue Code are necessary for the security of the land revenue. Having regard to the power reserved under Section 55 to fix rates for the use of the water of streams and tanks which are vested in the Government, and under the Irrigation Act to charge rates for canal water and percolation and leakage rates, to the policy declared with reference to subsoil water drawn from wells, and to the system of reclamation leases described above, His Excellency in Council considers that Section 107, nor at any rate clauses (*b*) and (*c*), are unprofitable to the land revenue. If in some case, not at once perceptible, an increase of land revenue might be claimed under these clauses without violating any of the pledges given by Government from time to time, and this is very doubtful, His Excellency in Council is satisfied that no such advantage is comparable to the disadvantage of retaining on the statute-book a proviso which is of such doubtful significance as to be capable of discouraging the investment of capital in agriculture. The repeal of Section 107 in whole or in part will therefore be taken into consideration.

No. 201 OF 1884.

FROM

A. S. BULKLEY, ESQUIRE,
Deputy Superintendent, Gujarát Revenue Survey;

To

J. K. SPENCE, ESQUIRE,
Collector, Panch Maháls.

Camp Godhra, 10th April 1884.

SIR,

I have the honour to submit a report on the revision settlement of the khálsa villages of Jhálod Táluka to be introduced on the expiry of the term of the original survey settlement, and to request that you will have the goodness to forward it in due course for the sanction of Government to the proposed settlement and to its introduction in the current season.

2. Paragraph 12 of Government Resolution No. 3107, dated 11th May 1882, directs that in anticipation of the expiry of the original settlement the classification should be carried out of lands which have facility for irrigation at a higher rate than that of lands which have not, in order that at the revision of the settlement the principle should be adopted of imposing an enhanced soil assessment on all such lands in lieu of levying, as hitherto, a special rate on only those lands that are actually irrigated. This classification has now been effected in accordance with rules drawn up by the Survey and Settlement Commissioner and approved by Government in its Resolution No. 7937, dated 14th November 1882.

3. The object being to levy from the total area of lands adjudged to be and classed as being in possession of this inherent advantage, such an amount of enhanced soil assessment as shall suffice to cover the amount of the original special water-assessment that will for the future be abandoned, and in doing so to impose a burden so light as to be scarcely felt even if that advantage be not utilized, and such as shall not discourage any occupant from investing capital or expending labour in its utilization, it is proposed to rate the classification value of such advantage according to a scale ranging from 2 annas to 6 pies, the assessment per acre resulting from this applied to the maximum dry-crop rate of the village being added to the original soil assessment.

4. It is not proposed to make any modification in the maximum dry-crop rates or in the grouping of the villages that were sanctioned for the original survey settlement. That settlement has been found to give general satisfaction in respect of these details, and I am respectfully of opinion that if the modifications now proposed are found to work advantageously, the term of its guarantee should be extended so as to expire concurrently with that for Godhra Táluka in 1902-03.

5. The effect of applying the proposed enhanced soil rates to the total area of Government and occupied lands classed as having facility for irrigation and at the same time of abandoning the special water-assessment imposed by the original survey settlement on occupied Government lands under irrigation, is shown in the figured statement appended in detail for each village in its particular class. The following figures are an abstract of that information, and show that the net result for the whole táluka is an increase of Rs. 81-12-0 or a trifle over $\frac{1}{4}$ per cent. on the total assessment:—

YEAR 1882-83.				Increase.
ACCORDING TO ORIGINAL SURVEY SETTLEMENT.		ACCORDING TO REVISED SURVEY SETTLEMENT.		
Area.	Assessment including special water-rate.	Area.	Assessment.	
A. g.	Rs. a.	A. g.	Rs. a.	Rs. a.
33,390 11	30,898 12	33,390 11	30,980 8	81 12

6. But in another way the result is that whereas Rs. 742-4-0 were levied as a special water-assessment on an area of 628 acres 1 guntha, Rs. 824 will in future be levied as a lightly enchanced soil-assessment spread over an area of 12,501 acres 35 gunthás.

I have the honour to be,

Sir,

Your most obedient Servant,

A. S. BULKLEY,

Deputy Superintendent, Revenue Survey, Gujarát.

No. 1283 of 1884.

Camp Chanod, 18*th April* 1884.

Forwarded to the Commissioner, N. D.

2. The undersigned has no remarks to offer on the revised settlement which has been carried out in strict accordance with the most recent orders of Government on the subject.

3. The increase in assessment on lands possessing advantages for irrigation is so small that it can hardly be cavilled at, and the rayat will now be able to utilize such advantages in full confidence that no extra assessment will be demanded from him.

J. K. SPENCE,

Collector of Panch Maháls.

Extract paras. 1 *to* 13 *of the Survey Commissioner's letter No.* 910, *dated* 3*rd May* 1884, *submitting remarks on the above correspondence.*

I have the honour to forward the papers noted in the margin, referring to the proposals for the revision settlement of the Jhálod Mahál in the Collectorate of the Panch Maháls.

Letter No. 201, dated 10th April 1884, from the Deputy Superintendent, Gujarát Revenue Survey.
Memorandum No 1283, dated 18th April 1884, from the Collector of Panch Maháls.

2. The survey settlement was introduced into the Jhálod Mahál in 1881-82 under the sanction conveyed in Government Resolution No. 3107, dated 11th May 1882, a guarantee for two years only being given, so that the rates might fall in for revision simultaneously with those of the main táluka of Dohad, which had been guaranteed for five years from 1878-79. It has of course been unnecessary to revise the field operations of measurement and soil-valuation so recently carried out, but steps have been taken for the first time in this revision to give effect to the policy in connection with the total abolition of special well-assessment announced in paragraph 32 of Government Resolution No. 2619, dated 26th March 1884.

3. The classification of the jiráyat lands of the Jhálod Mahál was confined entirely to a valuation of the productive capabilities of the surface soil, no farther scrutiny being made to ascertain whether the land possessed any subsoil facilities for irrigation. This system of classification was first adopted at a time when the claim of the State to a prospective share in the profits of improvements made by the occupant from private capital and resources was not barred by any legal enactment. In 1865, when the Survey Act was passed, the guarantee that such improvements made subsequent to the survey settlement should be perpetually exempt from assessment was given for the first time and a marked departure was thereby made from the immemorial custom of the country and the practice of native administrations. When the custom prevailed

of taxing the actual utilization of subsoil water as soon as brought to the surface, it followed that the natural advantage of water available for irrigation at a short distance from the surface was purposely not taken into account as one of the elements of fertility usually considered in the classification. But when Government deliberately stepped in and declared that no extra cess should be levied in future on the actual use of well-water, the possession of the facility to obtain water for a well became an item in the general appreciation of land without which relative equality of valuation could not be possible. For it will scarcely be denied that in most parts of India the fact that in certain lands water is procurable at a reasonable distance from the surface and that by digging a well and producing garden crops the incidence of the assessment may be enormously reduced must give to those lands a superiority which is distinctly capable of appreciation.

4. It is scarcely to be wondered at, therefore, if at the time of the passing of Act I of 1865 the subject of making a small increase to the soil-rates of the land which possessed facilities for irrigation by wells attracted immediate attention. The discussion was carried out chiefly in connection with the proposal to do away with the direct well-assessments imposed at the settlement and was intimately connected with the recoupment of the revenue to be abandoned. In reviewing the correspondence Government distinctly approved the principle of the scheme which was advocated by Mr. (now Sir Barrow) Ellis, but did not direct its immediate extension to the operations then in progress, contenting themselves with directing that "whenever a revison takes place the Survey Commissioners and Superintendents should consider whether the special rates imposed on existing wells may not be got rid of without a great sacrifice of revenue."

5. I believe I am correct in saying that since the publication of that Resolution the idea of seizing the opportunity of the revision of rates to review the classification of the soils of Gujarát with reference to subsoil water advantages has been steadily kept in view, and I would wish to draw special attention to the fact, as it has been argued that the scheme was abandoned after the discussion in 1865 on the grounds of the difficulty of carrying it out and that Government have suddenly revived it. On the contrary, all those officers who since 1865 have superintended the survey of the province have contemplated its ultimate adoption. Colonel Prescott, whose connection with this survey lasted until 1876, writes thus in paragraph 8 of his report No. 548 of 1st December 1864: "Water in the soil and very close to the surface is a gift of nature almost peculiar to the province of Gujarát. It ought therefore to be considered as one of the fertilizing elements of the soil and its value incorporated and included in the soil assessment whenever it is practicable." Mr. Beyts who succeeded him, in paragraph 10 of his report No. 1503 of 13th August 1874, argued against the remission of the rates on old wells which, as he stated, had been usually constructed under "*ganwats*" giving a full remission of garden rates for 25 years, but proposed that "the remission should be delayed until the revision settlements became due, *i. e.*, on the expiration of the present lease, when a re-classification of the land upon a method suggested by long experience would enable Government to cancel direct well-taxation with advantage;" and he adds: "What is injudicious now may be justified then by extension of the natural bágáyat assessment in a manner which should not be felt by the people". That the late Commissioner of Survey, Colonel Anderson, contemplated the operations now ordered without any fear of difficulties is apparent from his remarks in the 6th paragraph of his report to the Secretary to Government, Revenue Dapartment, No. 1202, dated 12th November 1880, in which referring to Gujarát he says: "Land with water near the surface is clearly in possession of a natural advantage which renders it a fit subject for a somewhat higher rate of land-tax than land not having that natural advantage. In the revision the possession of the natural advantage would be fixed by the re-classification carried so far at any rate."

6. I think I have sufficiently shown above that the occasion of the revision of rates in Gujarát has been looked forward to as the opportunity of abandoning all well-assessments of every description and at the same time of slightly adding to the soil-valuation of those lands in which it is believed that wells can be dug

with fair ease and at moderate expense. And as Government in paragraph 12 of their Resolution No. 3107 of 11th May 1882, sanctioning the original survey rates for the Jhálod Mahál, specially directed me to revise the rates of the táluka on that principle, I had to consider the manner in which the necessary classification could best be carried out and to draw up technical rules for the guidance of those entrusted with the duty.

7. In deciding as to the character and structure of the rules I was much assisted by a perusal of the papers of the discussion in 1865 and the objections pointed out by Messrs. Rogers and Pedder. The former dwelt upon the difficulty of estimating the quality of the water and the depth from the surface and deprecated such points being left to the "surmises" of classers drawing from Rs. 20 to Rs. 40 a month. The latter showed the danger of applying any general scheme to tracts in which exceptional conditions prevailed and instanced the táluka of Chikhli in Surat as one at least to which Mr. Ellis' scheme could not be safely applied. The objections urged are entitled to great weight. Mr. Rogers, however, appears to have forgotten the fact that in the Survey Department of Bombay the very least originality consistent with independence of judgment is left to native classers, who in all valuations which they are called upon to make are guided by detailed and technical rules, the object being that the expert by whom their work is tested may be furnished with a distinct reason for every conclusion they come to. To obviate, therefore, as far as possible, any objection such as that made by Mr. Rogers it was determined that each field should be scrutinized under clear directions and that no plot of land should be adjudged to be irrigable unless certain fixed criteria had been applied to it and certain conditions found to be present. With reference, moreover, to Mr. Pedder's objections, I have recommended that the rules shall be altered and modified to suit the conditions and requirements of each tract coming under revision settlement, so that in districts like Chikhli, where phenomenal conditions are observable in the water-bearing strata, the principles may only be partially applied, or, if good reason is shown, may not be applied at all. My own experience of Gujarát, which has extended to six years, leads me to agree with Colonel Prescott that the tracts where such disturbing conditions do exist can be usually distinguished and their limits defined with fair accuracy.

8. In the preparation of the rules for the tract now under consideration I have received most valuable assistance from Mr. Bulkley, Deputy Superintendent, Gujarát Revenue Survey, whose 28 years' experience of the soils and water-bearing strata of the province entitles his opinion to great weight. These rules, which are comparatively simple on account of the absence of any salt deposits or other unfertilizing elements in the subsoil water of this tract, were sanctioned by Government Resolution No. 7937, dated 14th November 1882, and were submitted to the professional scrutiny of the Department of Irrigation before being brought into use. They are tentative of course and liable to be modified in some particulars from the experience gained in the field, but Mr. Bulkley who has superintended their working has found no difficulty in applying them and has stated in his Progress Report for the past year that, as far as his test had gone, the classers had worked with satisfactory accuracy.

9. In the case of lands adjudged to have facilities of subsoil water for wells the rules require that more or less evidence of the fact should be present and lands are only entered as having such facilities if the evidence available shows that the advantage can be utilized by digging to a depth of less than 30 feet from the surface. The degree of advantage possessed by each piece of land believed to have such facility is carefully distinguished according to the amount of certainty attainable, the depth at which water is known or believed to be found, and the probable difficulty attending the construction of a well.

10. It will be observed that the rules for the Jhálod subsoil water classification contemplate the classification of all lands capable of being irrigated from Government streams by "*dhekudis*" or water-lifts for the advantage they thereby possess, and, following the analogy of wells, it is proposed to do away with the special rate levied on those lands to which "*dhekudi*" water is actually applied. This is an extension of the principle to which Government may not be prepared to assent in all cases, as under Section 55 of the Land Revenue

Code the right to levy a distinct cess on such water is clearly provided for; but as the valuation of the limited area irrigable by "dhekudis" has been made and recorded by the classers, I would recommend that the proposed "*dhekudiat*" settlement should be allowed to stand. Jhálod and its neighbouring district of Dohad lie in a very isolated position and are populated chiefly by Bhils to whom unusual advantages must be offered before they will undertake any agricultural enterprise. The present rate levied on lands irrigated from "dhekudis" is double the dry-crop rate, and when the cost of erecting a lift and keeping it in repair is considered and also the expense and difficulty in obtaining manure for irrigated cultivation which are represented to be very great in Jhálod, the special water-rate must of course stand in the way of the extension of a form of cultivation which it is of the utmost importance to encourage among a very backward people. In the other districts of Gujarát it may not be considered advisable to abandon the direct revenue from "*dhekudis*," but, as I said before, the circumstances of each tract will be fully taken into consideration before the rules are framed and Government will have an opportunity of making its wishes known on each separate revision.

11. I now proceed to consider the results of the experiment as reported by Mr. Bulkley. The rules prescribe two tables, the scales in which are not fixed, but only intended to show the relative valuation of each degree of subsoil water facility and "*dhekudi*" advantage respectively. It is intended that in estimating the extra valuation to be added to the soil-valuation for each degree of advantage the circumstances of each táluka should be dealt with separately, regard being had to the condition of the people, the number of wells and their quality, the area believed to be capable of well-irrigation and the amount of "bágáyat" assessment which it is proposed to surrender. There is a distinct advantage in dealing separately with this item of soil-valuation for each tract coming under revision, as the avowed intention of Government is to make the incidence of the assessment it produces as little felt as possible, and what is scarcely noticeable to the Pátidár of Nadiád might be a perceptible burden to the Bhil of the Panch Maháls. And although the great object of the valuation of subsoil water advantages is to make the assessment relatively equal by including in it every inherent advantage, it must be admitted that the recoupment of the revenue derived from pakka and kacha wells which Government is abandoning is a weighty financial consideration. For, in relieving the occupants of lands under such wells of the special rate when they have paid during the past settlement, a concession is being made to them which in the majority of cases they have no real claim to. There are few old wells the constructors of which have not enjoyed the benefit of special conditions for a period sufficient to have recouped them for the original outlay.

12. The amount of the existing special cess on lands under both pakka and kacha wells and water-lifts which it is proposed to abandon in Jhálod is small, being only Rs. 742-4-0, imposed in addition to the dry-crop assessment on an area of 628 acres. The scale which Mr. Bulkley has applied to represent the various degrees of advantages from the highest to the lowest runs from 2 annas to 6 pies, and by the application of this scale a revenue will be obtained on the occupied lands classed as having subsoil water facilities amounting to Rs. 824. The total culturable area of these villages is 59,751 acres, out of which 16,526 acres, or nearly one-third, have been declared to have more or less subsoil advantages assessable under the present plan. The sum of Rs. 824 spread over the occupied portion of the above area gives about 1 anna per acre as the average increase to the existing dry-crop rates of lands possessing the advantage. Spread over the whole revenue of the tract it will be found that a trifling addition of between four and five pies has been made to each rupee of existing assessment or about one half-penny to every two shillings. The increase is one which will scarcely be noticed as forming a part of a revision scheme, and the benefit is gained that the vexed question of well-taxation is set at rest for ever.

13. It will be seen from paragraph 4 of the Deputy Superintendent's report that it is not intended to make any alteration in the grouping of the villages sanctioned two years ago, nor in the maximum rates to be applied to each group. The only increase in the assessment is Rs. 81-12-0, which is the excess over the

abandoned "bágáyat" revenue which has resulted from the application of the anna scale for facilities of irrigation. The total assessment will be Rs. 30,980-8-0 against Rs. 30,898-12-0 under the existing settlement.

Extract paragraphs 1 to 8 of the Commissioner Northern Division's letter No. 1847, dated 24th May 1884, submitting the above correspondence for the orders of Government.

Deputy Superintendent, Gujarát Revenue Survey, No. 201 of 10th April 1884.
Panch Mahál Collector's No. 1283 of 18th April 1884.
Survey and Settlement Commissioner's No. 910 of 3rd May 1884.
(Received 23rd May).

I have the honour to submit correspondence as per margin, and to offer a few observations thereon.

2. This classification of water facilities has been carried out in accordance with rules carefully elaborated by the Survey Commissioner and already approved by Government. It is perhaps only necessary here to observe that these rules provide a proportionate and very moderate classification value for water from streams and from wells obtainable at various depths up to 30 feet from the level of the bank or from the surface of the land. No separate value is attached to natural facilities when the water is below the above depth.

3. To avoid any possible misconception, it may be added that the land under old wells has *not* been subjected to maximum dry-crop rates, as was done in some cases in the Deccan. The alternative course adopted in Jhálod appears far more equitable as the extra charge is not *confined* to lands actually under irrigation.

4. The financial effect of the measure is shown in these papers, but the amount of the late water assessment does not include the "koss" or water-bag rate on "kacha" wells, and this leads me to remark that in a comparatively poor district such as Jhálod the abandonment of the Kasar (fixed assessment) on permanent masonry wells is perhaps of less real importance than the abolition of the penalty on less substantial wells hitherto enforced by the above "koss" rate.

5. An argument which has been strongly urged against the new policy of Government regarding well assessment is that the occupants may not possess capital to enable them to utilize the advantages they are required to pay for. But in the first place it may be safely assumed that the small additional assessment now imposed will materially increase the saleable value of the lands inasmuch as it will afford *primâ facie* evidence that water facilities do exist.

6. And it appears to me that too much weight is allowed in the above argument to the expense of well-construction. The rich man may have his costly masonry well, but the poor man's well is the "kacha" one, which is now charged at a higher proportionate rate than the more permanent structure. A pit, more or less built up with inexpensive materials at very moderate cost, will generally supply sufficient water to save a crop when the rainfall is scanty or inopportune. Even an *unbuilt* pit will often contain a sufficient supply of rain-water to enable the poor cultivator to raise a little crop of chillies, tobacco or vegetables in the corner of his field, and the construction of such "kacha wells" will no longer be discouraged by the levy of what is frequently a *prohibitive* rate.

7. I repeat my conviction that the abolition of this rate will be even more of a relief to Gujarát than the abandonment of the fixed well assessment, and I believe that the rayats of that province will accept the alternative now offered them with gratitude. They will now be encouraged to construct wells *according to their means*, while the knowledge that this classification is final, and that the question of well assessments is now settled for ever, will probably result in a development of the resources of the country which we might have waited many years for under the old system.

8. The question of abandoning a special rate on lifts when the water is obtained from a Government stream without expenditure of private capital may be left over for discussion hereafter. It is one apart from that of the classification of the *inherent advantages in the soil*, and it might afford an undesirable precedent to include the dhekudi rate in the soil classification. In this particular case Mr. Stewart shows that liberality is desirable, and I would advise that the rates proposed be sanctioned *separately*, under Section 55 of the Land Revenue Code.

No. 1376 OF 1884.

To

THE SECRETARY TO GOVERNMENT,
Revenue Department.

Survey Commissioner's Office,
Poona, 2nd July 1884.

SIR,

I have the honour to submit a few remarks in continuation of my letter No. 910, dated 3rd May last, reporting the proposals for the revision settlement of 72 khálsa villages of the Jhálod Petha of the Panch Maháls Collectorate.

2. It has come to my notice in considering the proposed rates for the neighbouring táluka of Dohad that in the classification of the land for subsoil advantages carried out under para. 32 of Government Resolution No. 2619, dated 26th March 1884, a very small area has been included as irrigable under Class C. of the scale appended to the rules, which is applied to lands believed upon the evidence available to have subsoil water facilities at from 22 to 30 feet from the surface. This led me to ascertain how the matter stood with regard to the Jhálod Petha as well, and I find that the application of the class in that tract also has been very limited, only 685 acres having been included in it.

3. As I am aware of the express desire of Government to add as little as possible to the burdens of a somewhat remote though very fertile region like Dohad, I am about to propose that the area classed as irrigable under Class C. should be deducted from the total area adjudged to have assessable subsoil facilities for irrigation under the present scheme, and as the same principle should be applied to the Jhálod Petha, I beg to recommend that the 685 acres brought under that class should be deducted from the total irrigable area mentioned in para. 6 of Mr. Bulkley's report which will then become 11,816 acres. The additional assessment for subsoil advantages proposed to be placed on the area under Class C. is Rs. 28, deducting which from the total assessment for subsoil advantages the result is Rs. 796. The effect of this alteration on the average increase of assessment of the area declared to be assessable for subsoil advantages and on the total occupied area which in these villages is 33,390 acres, is scarcely appreciable.

4. As in an experimental scheme of this sort any general indication of the manner in which the duty has been conducted will be welcomed by Government, I beg to point to the small area classed under the heading C. as a proof of the scrupulousness with which the rules have been carried into effect and of the strictness of the rules themselves in proceeding on evidence. Had the classification been rough and careless we should probably have found a large area crowded into the lowest class on the supposition that, as the assessment for the lowest degree of subsoil advantages would be very trifling, there would be no harm in including any land with a fair chance of having water within reach. I attribute the small area classed under this heading to the fact that the evidence which the rules rely on has not been forthcoming. In the quondam poppy plains of Jhálod there is such a vast extent of land irrigable by digging to shorter depths that instances of wells being sunk at depth of upwards of 22 feet must be comparatively rare and the classers could have had but little means of gauging the irrigability of the land likely to come under Class C.

5. May I request the favour of your causing the word "culturable" to be inserted between the words "total" and "area" in the 8th line of para. 12 of my report and the figures "59,751" substituted for "33,390." Instead of one-half the proportion will be nearly one-third. The error was not noticed until the report was printed.

I have the honour to be,
Sir,
Your most obedient Servant,
T. H. STEWART,
Survey and Settlement Commissioner.

Through the Commissioner, N. D.

Revenue Survey and Assessment: Jhálod Táluka, Panch Maháls.

No. 6015.

REVENUE DEPARTMENT.

Bombay Castle, 25th July 1884.

Letter from the Commissioner, N. D., No. 1847, dated 24th May 1884—Submitting correspondence noted in the margin, regarding the revision settlement of the khálsa villages of the Jhálod Mahál in the Panch Maháls Collectorate; and making certain observations on the subject.

Letter from the Deputy Superintendent, Gujarát Revenue Survey, No. 201 of 10th April 1884.
Memorandum from the Collector of the Panch Maháls, No. 1283, dated 18th April 1884.
Letter from the Survey and Settlement Commissioner, No. 910, dated 3rd May 1884.

Letter from the Survey and Settlement Commissioner, No. 1376, dated 2nd July 1884.

RESOLUTION.—The first survey settlement was introduced into the Jhálod Mahál in 1881-82 with a guarantee of only two years, so that a revision might take place simultaneously with that of the original settlement in the adjoining Dohad Táluka. The Jhálod rates of assessment were light, the average dry-crop rate per acre being only 13 annas 10 pies, that for rice Rs. 1-12-10 and that for garden land Rs. 2-6-0. The results were reported to be satisfactory in 1883, and it is not proposed to make any alteration in the general rates or grouping on revision. The new operations of which the result is now reported are those undertaken under the orders of Government in Resolution No. 3107 of May 11th, 1882, that an experiment should be made in the application of the principle "that land which has facility for irrigation should be classed at a higher rate than land which has not, in lieu of imposing a special rate on lands actually irrigated."

2. As this experiment has attracted much attention and possesses great interest in connection with the approaching revision of survey settlements in Gujarát, His Excellency the Governor in Council proposes to set forth the views of Government upon it in some detail and in amplification of paragraph 31 of Resolution No. 2619 of March 26th.

3. The Jhálod Mahál is a sub-division of the Dohad Táluka and lies to the north of it, with Native States on its northern, eastern, and western frontiers. The soil is generally of very good quality and the subsoil water is abundant and sure. The tract is intersected by rivulets and by two more important streams which afford facilities for irrigation by lift. But an isolated position, lawless neighbours and a Bhil population have been adverse to settled agriculture and the survey found only about 750 acres under irrigation from wells and water-lifts. Under the rule of His Highness Sindia, before A.D. 1860, the revenue was collected under a rude form of the village system, the district and village officers apportioning to each "Khátedár" the quota of the aggregate assessment of the village for which he was deemed liable. There was no record of the area of holdings or of the fields held by each Khátedár. Some improvement was made in the years following 1860 by rough measurements, but the survey settlement sanctioned in 1882 for the first time furnished an accurate statistical record in the usual form. The Mahál however enjoyed a steady advance in prosperity up to the year of scarcity, 1877-78, and in 1872 paid without difficulty a revenue demand of Rs. 33,873, which exceeds both the total assessment imposed at the original settlement of 1882 and that proposed under the revised survey settlement. After a brief period of depression the revenue revived in 1880-81, the collections in which year were only 3·3 per cent. less than the full revenue demand under the original settlement sanctioned in 1882 for two years. Against this small increase is to be reckoned the advantage of improved communications including access to a railway which gives facilities for the carriage of garden produce to the markets of Gujarát. The soil and water-supply of Jhálod have the capacity for large production of garden crops, but up to 1882, in lack of facilities for transport, tobacco, sugarcane, pepper and vegetables were grown on only 1·25 per cent. of the acreage under cultivation.

4. In the temporary settlement of 1882 the Survey Department proposed to place on the acreage under built wells and water-lifts a special rate equal to the maximum soil rate of the group in addition to the appropriate soil rate. This being a very moderate assessment for garden land was sanctioned for the two years of the settlement, but in according sanction His Excellency in Council expressed the opinion that it would be better slightly to increase the assessment of all lands which number facility for irrigation among their inherent qualities, than to assess a special rate on lands actually irrigated. The Commissioner of Survey was instructed to take measures for giving effect to this view during the two years of settlement, and the proposals now under consideration are the result of these instructions.

5. The effect of the revision settlement may be thus described. As the survey measurement and classification of the land has been reviewed, it is not open to any further revision or change. The relative values of fields have been finally determined, and no account will be taken in future of any change in relative value due to the improvement of a field by its occupant. Any future increase of assessment will be general for the whole tract, and on the basis of a general rise in the value of land ensuing on the development of agriculture and trade. In classifying the land according to relative value, account has been taken of the inherent advantage of accessible subsoil water, the existence of which has been ascertained by a very careful investigation by skilled agency working under elaborate rules. The portion of the whole assessment on the occupied land due to the appreciation of water advantage as an element of classfication value is Rs. 796 out of a total of Rs. 30,952-8-0. Spread over the occupied area possessing water advantage, the Rs. 796 represent about 1 anna per acre on the average. The average assessment being somewhat under Re. 1 per acre, the average assessment of water advantage is about $6\frac{1}{4}$ per cent. thereof. The difference in the total assessment of occupied land in the tract under the new system, Rs. 30,952-8-0, and that under the original settlement, Rs. 30,898-12-0, is nominal or Rs. 53-12-0. The special well assessment abandoned was Rs. 742-4-0 and the assessment for water advantage is Rs. 796. But only a fraction of the Mahál is now under irrigation, while the unused facilities are great, and the average rate of 1 anna per acre is now accepted as the sole charge of Government on this inherent capability. The facility of obtaining water by lifts from streams is in this case included in the calculation, as His Excellency in Council is desirous of encouraging to the utmost the use of irrigation in this hitherto backward Mahál. The position therefore is this. The average assessment of the land including all inherent advantages is under 1 rupee per acre. After the extra fraction for water advantage has been added the assessment will except in very rare cases be within the maximum dry-crop rate. This assessment is to be paid whether the occupant uses all his advantages or not. He will pay no more if he irrigates his land and no less if he does not. The assessment appears to absorb a moderate portion of the net profits of cultivation, and it is absolutely certain that the method of valuing the subsoil water advantage as an element of the permanent classification of value can present no discouragement to the improvement of the land by irrigation or otherwise.

6. That there may be no ground for the misconception that the settlement under review is a deviation from the recognized principles of survey settlement, His Excellency in Council will briefly review the history of this measure.

7. In the first place let it be noted that the question involved is not whether irrigated land should bear a higher assessment than unirrigated, but in what way the command of water for irrigation may be considered in estimating the relative value of a field, without discouraging the occupant from applying his labour and capital to bringing the water into use.

8. By immemorial custom irrigated land pays a higher rent-charge per acre to the State than dry-crop. It is an old instruction by the Honourable Court of Directors that "land should be assessed according to its capability and not according to its produce." Mr. Williamson, Revenue Commissioner, wrote of the Indápur settlement in 1838: "The power of affording water for irrigation is one of the most valuable capabilities of land, and to bear it in mind in fixing an

assessment is therefore strictly consonant to the orders of the Honourable Court." Government, concurring with the Revenue Commissioner, resolved: " The capability of the land depends as much on the facility for irrigation and local peculiarities as it does on the colour, depth and other qualities of the soil. The principle therefore on which bágáyat is assessed at higher rates than jiráyat is one which must be admitted generally." The writers of the Joint Report of 1847, in which the principles proposed and generally adopted for survey and settlement in this Presidency were first formulated, thus treated the subject :—

" The object sought to be ascertained, by our system of classification is the determination of the relative values of the fields into which the land is divided during the process of measurement. The circumstances affecting the values of fields within the limits of the same village, where the climate may be considered uniform, are their natural productive capabilities, their position with respect to the village as affording facilities or otherwise for agricultural operations, and in the case of garden and rice lands, the supply of water for irrigation.

" We have found it desirable to estimate separately, the intrinsic capabilities of the soil, all extrinsic circumstances affecting its value, and the facilities it may possess for irrigation.

" Irrigation greatly augments the productive powers of the soil, and whenever there is a command of water for this purpose, it becomes a very important element in fixing the assessment of the land for which it is available."

The estimation of these data having been completed, maximum rates were fixed for the various kinds of cultivation, and these, when adjusted to the relative values of fields, gave the actual assessment of each.

9. The " command of water " was thus an advantage which raised the assessment because it increased the productive power of the soil. The assessment was based on the relative productive capacity of the fields, the difference of which is a measure of the rent, and the object was to secure as the Government revenue a part of the rent so measured, leaving a part to the occupant in addition to the cost of cultivation. It cannot be questioned that lands which have " command of water " for irrigation bear a higher letting value and can equitably bear a higher assessment than lands which have no such command.

10. The survey assessed as irrigated the lands then actually under irrigation. It treated the matter in one of the two or more possible ways in which it may be treated. That is to say, while assessing only actual irrigation, it contemplated the ultimate assessment also of new irrigation after the converter of dry-crop into irrigated land should have enjoyed the benefit of his improvement for a time. The following are extracts from the rules embodied in the Joint Report :—

" The assessment.....has been fixed by Government for a period of thirty years, during which period the full benefit of every improvement, such as the conversion of dry into irrigated land by the digging or repairing of wells and tanks.....will be secured to the incumbent of the land and no extra assessment levied on that account."

This rule reflected the practice under the Marátha Government, whereby a cultivator proposing to dig a well obtained a promise of exemption from increased assessment on account of it for a period agreed upon. It is identical in principle with the section of the Land Improvement Loans Act of 1883 [Act XIX of 1883, Section 11] from which the following passage is quoted :—

" When land is improved with the aid of a loan granted under this Act, the increase in value derived from the improvement shall not be taken into account in revising the assessment of land revenue on the land : Provided as follows :—

" Where the improvement consists of.....the irrigation of land assessed at unirrigated rates, the increase may be so taken into account after the expiration of such period as may be fixed by rules to be framed by the Local Government with the approval of the Governor General in Council."

11. But after 1847 and long before 1883 the policy of the Government of Bombay as to assuring to occupants the value of improvements had taken a different course. This policy received legislative confirmation in the following section of the first Survey Act (Act I of 1865, Section 30) :—

" It shall be lawful for the Governor in Council to direct at any time a ..... revision of assessment. Such revised assessment shall be fixed not with reference to improvements

made by the owners or occupants from private capital and resources during the currency of any settlement under this Act, but with reference to general considerations of the value of land, whether as to soil or situation, prices or produce or facilities of communication."

12. This section was re-enacted as Section 106 of the Land Revenue Code (Bombay Act V of 1879) and this Government has never deviated from the principle here declared as to improvements. It has been supposed that the following Section 107 (*b*) cancels the assurance given in Section 106 as regards such improvements as wells. But Section 107 (*b*) was not so intended and has never been so interpreted. It was stated authoritatively in the debate on this section in the Legislative Council that " direct improvements, caused by digging wells, &c., at the expense of the cultivator, are held free of assessment " as they had in fact been exempted under special orders of Government in all the revision settlements up to that date. And in 1881 the Government gave a general assurance that Section 107, Clause (*b*) of the Land Revenue Code, " will not be applied to wells dug at the expense of the owner or occupier of the soil."

13. It should be noted carefully that this assurance and Section 30 of Act I of 1865 and Section 106 of Act V of 1879 relate to revision and not to original settlements. Section 30 of the Act of 1865, while cancelling the apparent intention of the rules under the Joint Report to assess as irrigated the land brought under irrigation at the expense of the occupant after he should have enjoyed the profits during the term of a current settlement, said nothing about the land assessed as irrigated at the original settlement. No intention was expressed of abandoning the higher irrigation rates on this land, and perhaps it was understood that most of the land which could easily or naturally be brought under irrigation was already irrigated when the survey began its work. The inclusion of irrigation as one of the elements of the relative value of land on which its assessment is based was part of the operations of all the original settlements. The method in the Deccan was the fixing of higher maximum rates for irrigated cultivation, and in Gujarát, at least in the earlier settlements, the imposition on the well of an assessment which was then distributed on the land under it.

14. But before the first revised settlement (that of Indápur in 1866-67) took place, the policy of the method of assessing irrigation pursued at the original settlements also came under review. The Survey and Settlement Act of 1865 came into force in January 1865. In March 1865 the Revenue Commissioner, N. D. (Sir Barrow Ellis) addressed Government thus :—

" I have the honour to submit, for the consideration of Government, the propriety of abandoning in future survey settlements in Gujarát and Khándesh all assessment upon wells. The loss of revenue to Government I propose to make up by taxing the water-producing capability of soils, or, in other words, by slightly enhancing the valuation of land in which water is obtainable close to the surface.

" 2. The necessity for a change of system has become apparent in Gujarát, where no mode that has hitherto been devised for taxing lands irrigated from wells is free from the objections of want of simplicity, liability to evasion and inequality of incidence.

" 3. On this subject Captain Prescott, Superintendent of Survey, Gujarát, reports as follows :—

> ' Every body admits that the assessment of wells dug at the expense of private individuals and not by the State is contrary to all principle ; the question is only whether it is needful, and whether the State will suffer serious loss by dispensing with the extra assessment on land irrigated by private enterprise.
>
> ' Water in the soil, and very close to the surface, is a gift of nature almost peculiar to the province of Gujarát. It ought, therefore, to be considered as one of the fertilizing elements of the soil, and its value incorporated and included in the soil-assessement whenever it is practicable.
>
> ' As a case in point the Superintendent may mention that he is at present engaged in framing a scale for the classification of the rich sugarcane lands in the western portion of the southern districts of Surat, which are watered indiscriminately from " Pakka " and " Kacha " wells. " Pakka " and " Kacha " wells are found side by side.
>
> ' A " Pakka " well, lasting seventy or eighty years, costs from 45 to 60 rupees ; a " Kacha " well from 5 to 8 rupees per annum. It is consequently cheaper in the end to sink a " Pakka " well at once ; for the interest of Rs. 60 at 12 per cent. per annum is less than the yearly cost of a " Kacha " well.

'Now there are only two ways of assessing land like this: one by putting a rate on every bag used to lift water (whether taken from a "Pakka" or "Kacha" well) in addition to the soil-rate; the other by putting the full assessment, whatever it may be, on the soil at once.

'The latter is the right way, for the former, besides being objectionable in every respect, would be evaded to a certainty.* Now, on land like this it would manifestly be absurd to attempt a well-assessment or to draw any distinction between "Pakka" and "Kacha" wells. A good classification will show every acre of land having this peculiar advantage, and a fixed high special "Bágáyat" rate will meet all the requirements of the case.

'The Superintendent thinks it is worthy of consideration whether in future the assessment of "Pakka" wells in Gujarát may not be got rid of by slightly raising the dry-crop maximum rates, so as to meet the loss of revenue occasioned by striking off the "Bágáyat Kasar".'

"4. I think it must be admitted that the taxation of wells not constructed by the State is a deviation from the broad principles of the Bombay survey. All wells built hereafter by individuals will be free from taxation: it seems hard that wells similarly built by individuals, but before the advent of the survey, should be placed at a disadvantage, and subjected to heavier taxation for no reason save that their owners were in advance of their neighbours in employing their capital in agriculture.

"5. On the other hand, it is quite consistent with the principles of the survey that if the inherent qualities of the soil be such that water is produced by digging for it within a few feet of the surface, this capability should be taxed as well as other elements of fertility."

15. The subject was thoroughly discussed by the Collectors and Superintendents of Survey and practical difficulties were suggested in certain localities. The conclusions of the Government (of which Sir Barrow Ellis had become a Member, Sir Bartle Frere being Governor) are set forth in the following Resolution, dated June 8th, 1866:—

"The question submitted by the late Revenue Commissioner, N. D., was whether a system might not be adopted for assessing by a light rate the water-producing qualities of the soil, in preference to the present system of assessing highly only such lands as are found to be already supplied with wells.

"2. The authority of Major Wingate is quoted in support of the present system. But that able Revenue officer admitted the correctness of the principle advocated in the letter from the late Revenue Commissioner, N. D., No. 1045 of the 30th March 1865, and it seems that he was deterred from adopting the system, which he deemed to be better theoretically, by the consideration that it would involve a large sacrifice of revenue, and that the continuance of the system which he found in existence would not be felt as a hardship if the assessment were properly adjusted.

"3. In the discussion which has taken place there appears to have been some misapprehension, and questions not altogether relevant have been raised. The result, however, appears to be that the correctness of the theory is admitted, but difficulties are raised in respect to the practical application of the principle.

"4. These difficulties do not everywhere exist. As an instance, it may be noted that Major Francis has introduced a similar system into the district of Kandiaro in Sind. In the Bhatta lands of Gujarát the principle has also been successfully adopted by Captain Prescott and Mr. Pedder. The plan is certainly practicable where the lands in which wells may be dug are in tracts of considerable extent. Where the well-assessment is likely to disappear altogether in a short time, as in some of the districts of Gujarát, or where it is likely to fall off owing to the small profits of such cultivation as compared with dry-crop cultivation, it is surely better to devise and adopt some system for taxing the irrigable quality of the land. This need not be by the general imposition of additional assessment on all lands; it would naturally fall only on the best lands, which are ordinarily those in which such capabilities are found. It may in some places be necessary to have the portion of the village lands to which such extra assessment would be applicable noted and recorded by the Assistant in charge of classing duties; and His Excellency in Council does not think that the task would ordinarily be as difficult as the work of fixing again rates for garden lands under the present system. On the other hand, there are doubtless districts in which it would be difficult to carry out the taxation of the water-producing powers of the land sufficiently to compensate for the abandonment of the present system. But these exceptions should not prevent the adoption of a more correct system wherever it is practicable.

"5. Captain Prescott has framed a plan for working out an application of the principle. He may be permitted to try this in any district in which it may be found appropriate, and

* 'In Dholka, wells built for four "Kosses" capable of watering, say, 16 acres of land, and which it was supposed would pay four bag rates, work one "Koss" only for 24 hours, instead of four "Kosses" for 6 hours, and by this contrivance evade the full tax, paying for one bag instead of four.'

the result will appear in the settlement report. It will be sufficient for Government to record an opinion that the principle should be the basis of settlement whenever the Superintendent can safely and conveniently apply it. There can be no greater inducement to the digging of wells than the exemption of all wells from assessment. Of course, this exemption could not affect retrospectively, assessment now being levied, but whenever a revision takes place the Survey Commissioners and Superintendents should consider whether the special rates imposed on existing wells may not be got rid of without a great sacrifice of revenue."

The new system of assessing by a light rate the water-producing qualities of the soil instead of assessing highly only such lands as are found to be already supplied with wells, was thus left for introduction, or at least for experiment, "whenever a revision takes place." In Gujarát the time for this has only now come, as revisions are about to begin.

16. But in the Deccan revisions began in the very next year, and that of Indápur was the first. In submitting his proposals for this revision the Commissioner of Survey wrote (No. 147, dated February 12th, 1867, paragraph 178):—

"The course adopted by me is to put the first-class jiráyat (dry-crop) rate upon all land capable of being irrigated from existing wells, irrespective of the value assigned to it by the jiráyat classification. But where the land has been classed at the full Jiráyat rate, no addition has been made in consideration of its being irrigated by a well. Government wish a general addition to be made to the jiráyat rates of all lands possessing a water-bearing stratum, but it is almost impossible, I think, to work out this plan in the ever-varying soil of the Deccan. I have, therefore, taken existing wells as the guide, and considered only the land under them as having a water-stratum."

17. The remarks of Sir George Wingate were obtained on the proposals for the revision settlement of Indápur. In handing them up Colonel Francis, Survey Commissioner, wrote:—

"I would draw attention to the remarks in paragraphs 6 and 7 upon the question of assessing lands irrigated from wells. Sir George considers that water obtained from sinking a well may be viewed as a mineral resource and be fairly taxable as such after allowing for the expenses incurred in obtaining and making it available for irrigation. This is one of the best arguments I have yet heard in defence of the system of assessing well-irrigation. For this, and for other reasons, Sir George dissents generally from my proposals for exempting lands from extra assessment on account of well-irrigation. He thinks, however, that a drought-stricken district like Indápur may be specially treated as proposed by me. If thought advisable, therefore, my proposal might be held to be applicable only to Indápur."

What Sir G. Wingate wrote was as follows:—

"The question of excepting improvements made with the cultivator's capital, considered in the 135th and following paragraphs, is an important one, but demands very careful consideration in its practical application. The Survey Act limits the discretion of the revising officer more than is perhaps desirable by the enactment in the concluding part of Section 30, that 'such revised assessment shall be fixed, not with reference to improvements made by the owners or occupants from private capital or resources during the currency of any settlement under this Act, but with reference to general considerations of the value of land, whether as to soil or situation, prices of produce, or facilities of communication. Colonel Francis considers that this provision clearly exempts land brought under irrigation by the construction of a new well, or the repair of an old one, from the imposition of additional assessment on that account. I am not satisfied of the correctness of this view, and although a decision may not be of much importance in the case of Indápur it may be, and probably would be, so in other districts where well-irrigation is extensively carried on and admits of great development. The application of the cultivator's capital to the construction of a new well or the repair of an old one does not *create* water for irrigation, but simply provides means for raising the water, stored in the subsoil, to the surface and applying it to the land. The well is the production of the cultivator's capital, but the water is not. The operation is exactly analogous to the opening of a new mine, until which time the subterranean mineral lies useless to man and yields nothing to the proprietor of the land in which it exists. But when once capital has supplied the means of bringing the mineral to the surface in a form suitable to man's wants, it immediately acquires value, and yields a rent or royalty to the proprietor of the land from which it is extracted. Water, like minerals, is a subterranean product, of great value in tropical climates, and therefore capable of legitimately yielding a rent to the lord of the soil, who is the Government in the present case. Colonel Francis estimates the average cost of the new wells constructed in Indápur at Rs. 400 each; 5 per cent. on this capital, *i.e.*, Rs. 20, with an addition for the replacement of the capital in 50 years, which may be considered as the duration of an ordinary well, together with an allowance for annual repairs, say, Rs. 10, thus making Rs. 30 in all, would be an adequate return to the cultivator for the expenditure of

his capital; and if the additional value conferred upon the net returns from the land irrigated from the well over and above those obtained from it when cultivated as dry-crop should exceed Rs. 30, then this surplus forms the value of the water which was previously an undeveloped capability of the land, and may most legitimately be made the subject of additional assessment.

"I am unable, therefore, to agree with Colonel Francis in considering the conversion of dry-crop into garden land, by the construction of a new well or the repair of an old one, to be in all cases excluded from increase of assessment by Section 30 of the Survey Act. I would not, however, propose to apply to such land any higher rate of assessment than the maximum dry-crop rate which Colonel Francis has recommended, though I think it might be desirable to record all land irrigated from wells separately from the ordinary dry-crop, with the view of presenting accurate statistics of the settlement, and of facilitating the imposition of special rates of assessment on garden land at a future settlement, should that course be then deemed desirable. It may be further mentioned, in support of this suggestion, that should the district ever be brought under irrigation by means of a canal from the Mutha or other river which is referred to in the 189th paragraph of the report, the saturation of the soil by this means would probably give a great extension to well irrigation, so that the question of an additional assessment for that description of cultivation might rise into importance.

"New rice-land made out of dry-crop land at the rayat's expense, Colonel Francis also considers to fall under the exemption contemplated in Section 30. This view does not seem to be so open to question, though a good deal might be said on the subject of the situation of the land and the additional value of the produce resulting from its conversion into rice-lands. Where the situation is favourable so that the return is large compared with the expense of conversion, this higher value is due as much to the inherent advantages of the locality as to the application of the cultivator's capital, and a higher rate of assessment might on that account without unfairness be imposed, and as the question is not a practical one in the case of Indápur, which is not a rice-growing district, I think it would be impolitic for the Government to foreclose it before the revision of the settlement of a rice-district comes on for consideration, and however it may be settled, the converted land should, I think, be recorded in the survey registers as rice-land, in order to preserve correct statistics of the cultivation at the time of settlement."

Sir G. Wingate thus asserted the right of the State to share in any profits which might accrue from digging a well after allowing for recoupment of capital spent on it and for maintenance. He was content however in Indápur to assess land irrigated by new wells during the term of original settlement at the maximum dry-crop rate on revision.

18. The Government considered the principles of assessment thus discussed in a Resolution which sanctioned the proposals of Colonel Francis for the revision settlement of Indápur. The following are extracts from this Resolution (No. 1211, dated March 27th, 1868) :—

"There is a great deal of force in what Sir George Wingate urges in his 6th to 9th paragraphs about the taxation of improvements. But Government cannot fully coincide in all his conclusions.

"In regard to special taxation of wells, it is said with truth that water is, like mineral wealth, fairly taxable by the landlord when used by the tenant. His Excellency in Council, however, considers that the first principle of its taxation should be that which governs our taxation of the land itself, that is, the capability of being used rather than the use itself. If water of good quality be easily available near the surface, it is more reasonable to tax such land by a light additional rate, whether the water be used or not, than to lay an oppressively heavy tax on those who expend capital and labour in bringing the water into use. There is, however, a point at which this principle must be modified; for, when the land is such that when water is not brought to it it will bear nothing, and when water is used it will yield a fine crop, then even a light tax in the former case is impossible. Of this class are the sandy tracts in the Konkan, which under the influence of water become cocoanut gardens. It must be held that the right of Government to levy a rate by virtue of the water below the surface is in abeyance, or dormant, till the water is produced, but it is doubted greatly, even in this extreme case, whether it is politic, though it may be asserted to be just, to levy more than would be leviable from first-class rice-ground which enjoys also the benefits of water, not created it is true by the tenant, but utilized by means of his preparation of the ground.

"The question of rice fields as compared with dry-crop land next naturally arises. The Governor in Council is not prepared at present to concur wholly with Sir George Wingate; for it may be asked whether the adaptability of the soil to rice crops is not sufficiently taken into account if the land when so adapted is treated as first-class dry-crop land without adding as special rate because the tenant has expended capital in developing its qualities."

The Government thus declared its preference for the principle of taxing by a light additional rate land which possesses the advantage of subsoil water,

whether the water is used or not, to the principle advocated by Sir G. Wingate, *viz.*, that of taxing the actual profits of a well when constructed. But it was added that in cases where the land has no productive capacity until water is brought to it, the former principle does not apply and the assessment must be based on the use of the water. Even here, however, the Government deemed it politic to limit the assessments of land under wells to the rates fixed for first-class rice-ground.

19. The Government then stated its conclusions as to the application of the two principles to the circumstances appropriate to each :—

"And in respect to garden lands it is true that in some districts the difficulty of ascertaining what lands have water capabilities may prevent the adoption of a system that, in lieu of taxing wells specially, taxes all land capable of producing water with a reasonable amount of trouble. Still Government would advocate the propriety of restricting the demand of Government on well-lands to the maximum rate on first-class dry-crop soils. An extra rate for water capabilities in all districts in which such capabilities may be easily ascertained and recorded might properly be added to the classification, just as a double crop, or other special fertility, is dealt with. But this may not be practicable or expedient everywhere, and in all districts, such as that of Indápur, in which the garden cultivation is scanty, and it is a great object to encourage it, the best policy is that which Colonel Francis has adopted. It may be difficult to ascertain what lands are capable of producing water, but it is easy to make the maximum for dry-crop lands the maximum for well lands also. This course, which His Excellency the Governor in Council sanctions in the district now under review, will certainly lead to the great increase of well cultivation during the currency of the settlement now about to be made."

That is, in some districts the difficulty of ascertaining what lands have water capabilities may prevent the application of the principle preferred by Government, but in all districts in which such capabilities may be easily ascertained and recorded, the proper method is to add to the classification an element which will somewhat increase above its dry-crop rate the assessment on the land which possesses such capabilities. In districts where it is difficult to verify the existence of subsoil water advantage and especially where garden cultivation is scanty, it was thought preferable to make the maximum for dry-crop lands the maximum or well lands also.

20. The subject was carried further in the orders of Government in August 1871 on the revision settlement of the Mádha Táluka. The Survey Commissioner wrote of Mádha :—

"The Acting Superintendent adopted the Indápur plan of assessing well garden lands, which provides for the imposition of the highest jiráyat rate of the village on all lands irrigated from existing wells, which include those constructed during the period of the settlement, as well as the old ones subjected to assessment at the first settlement of the district.

"Under the rules in force the existence of well water supply is taken as an element of special value pertaining to the soil, which is provided for by a small addition to the classification rate, in the same way that we increase the classification value of a field if it is capable of growing a second crop owing to some inherent moisture in the soil."

21. Colonel Francis evidently supposed that he was carrying out the desire of Government to tax the subsoil water advantage by a light extra rate in the only way practicable in the Deccan. But the Government would not permit a measure which so nearly approached the taxation of improvements as even a light extra rate imposed on the evidence of a well made at the cultivator's expense. A resolution was therefore issued as follows, (No. 4050, dated August 22nd, 1871) :—

"The plan of assessing lands irrigated by wells in districts like those of Indápur and Mádha at the highest jiráyat rate instead of imposing an extra well-assessment has the entire approval of Government. But a maximum jiráyat rate should clearly not be imposed in cases where a well has been con-

structed since the introduction of the survey, and that alone, and not the actual quality of the soil, warrants the imposition. To do so would in effect be to tax improvements made during the currency of a settlement, and would be in contravention of Section 30 of the Survey Act. The only principle on which such a proceeding would be justifiable would be in consideration of the water-bearing properties of the soil. But the Survey officers have admitted their inability to act on this principle generally, and the result of the proposed system is to tax the man whose enterprise and labour have induced him to sink a well, while his neighbour, whose land may possess precisely the same properties, escapes the extra burthen, simply because he has not availed himself of his opportunities.

"It is of the highest importance to offer every encouragement to increasing the number of wells in those districts which are so subject to drought.

"His Excellency in Council directs that the rates on lands in these cases both in Indápur and Mádha be revised in order to their reduction where it is shown that the well from which they are actually irrigated, and not simply rendered capable of irrigation, has been constructed subsequent to the introduction of the survey."

A certain inequality was thus introduced between the position of old wells and new, which must be admitted to be a defect in the system. At the same time the assessment of land under a well at not more than the maximum dry-crop rate is a great concession as compared with the ordinary scale of assessment of garden lands which is often equal to many multiples of the dry-crop assessment. And it must not be supposed that all land watered by old wells was assessed on revision at the maximum dry-crop rate. The addition made to the ordinary classification was regulated by a scale, so that a smaller addition was made in proportion as the ordinary classification was lower or the land of inferior quality, and no addition was made on the lowest qualities of soil, or technically on soils classed at 4 annas or under.

22. The protection thus given to wells constructed in the period between the original and revision settlements by Section 30 of Act I of 1865, has been consistently respected, and Clause *b* of Section 107 of the Land Revenue Code has made no change whatever in the practice of exempting them from taxation.

23. The rule that land found under irrigation from wells at the original settlement and then assessed as garden land, shall at revision settlement be assessed not higher than the maximum dry-crop rate was intended for "the drier tálukas of the Deccan Collectorates, where the rainfall is as a rule light and uncertain." In 1874 the rule was generally adopted throughout the Deccan and Southern Marátha Country with this modification, that "the Survey Commissioners should at their discretion be empowered, in the case of districts where well irrigation has been carried on on an extensive scale, to impose an assessment which should in no case exceed a well assessment previously levied," and as to water-lifts it was held admissible to class at a higher rate land within a certain distance from a stream from which water can be obtained by means of a lift. The rules applicable to the Deccan and Southern Marátha Country were extended to Gujarát in 1881.

24. At the same time the other, and as the Government has considered, preferable method has not been found altogether impracticable in the southern districts. For as revision operations advanced from the dry districts of the Deccan to others with greater command of subsoil water, notably those of the Southern Marátha Country, the principle of slightly raising the classification value on account of command of water was adopted. Colonel Anderson, late Survey Commissioner, writes thus on the subject in connection with the revision of settlements in Gujárat (letter to Government, No. 1202, dated November 12th, 1880) :—

"When the time for revision settlement arrives in Gujarát, the plan being followed elsewhere in all revision settlements will fully meet the case in question. All extra assessment on land watered by wells on account of the well is abandoned, and a small extra assessment is placed on all lands having water so near the surface as to render it easily available, irrespective of the fact of a well

having been as yet sunk or not. This general small increase will probably compensate for the sum lost by abandoning the special extra assessment at a much higher rate on lands actually watered, because the area susceptible of being easily irrigated by wells is so much greater than that actually at present watered, though that area is everywhere increasing annually. Capital to be employed on land can now only find employment in improving means of cultivation. At the time of the first settlement it was more commonly turned to the acquisition and cultivation of additional land, which could then be obtained for the most part by simple application. The greater abundance of capital now compared with the time of the first settlement is an additional reason for changing the form of well taxation from an extra cess on the actual use of well water, to an extra and lighter cess on the ability to obtain the use of water.

"Land with water near the surface is clearly in possession of a natural advantage which renders it a fit subject for a somewhat higher rate of land tax than land not having that natural advantage. In the revision, the possession of the natural advantage would be fixed by the reclassification carried so far at any rate."

25. There is therefore nothing in the treatment of subsoil water advantage in Jhálod to claim attention as a novelty, because it is not novel. But the method is more elaborate and more thoroughly identified with the ordinary work of classification than that pursued in the Southern Marátha Country. And with the financial result of the revision settlement, which is an increase of the assessment by Rs. 53-12-0 (the old assessment being Rs. 30,893-12-0 and the revised assessment Rs. 30,952-8-0) are to be noted the following results to the people, *viz.*, that this system (1) relieves the agriculturist of heavy special well assessment, (2) relegates the valuation of "command of water" to the process of classification which is not to be repeated, and thus makes it part of the permanent estimate of the relative value of fields, (3) reduces the State tax on "command of water" as an element of value to a slight charge on the capability instead of a heavy charge on the fact of irrigation, and (4) places at the disposal of the agriculturists, in perfect security from taxation of improvements, the large irrigational facilities of the Mahál, which have hitherto lain almost unused.

26. It remains to be seen whether this method, which is practically indeed already in force in the "natural bágáyat" tracts of Gujarát, cannot be extended to all those parts of the province in which special well rates have hitherto prevailed. And it will be strictly in pursuance of the intention stated by Government from the first discussion of the subject that an experiment should be made.

27. Whether that experiment will be successful or not, will depend (1) on the moderation of the rating for subsoil water advantage and (2) on the accuracy with which that advantage is diagnosed. If the former operation is judicious and the latter successful, there can be no question, first, that the scheme will be a great benefit to occupants who now pay well rates, for they will pay a very small rate instead of a high one: secondly, that the scheme will attain the object in view by offering no discouragement but the contrary to the future construction of wells by private capital.

28. It may be said that to take account of the subsoil water as an element of value in estimating the relative quality of fields is to substitute a new way of taxing improvements for the old one. The argument is obviously unsound. In the first place it has been shown above that the survey from the beginning took account of the "command of water" for irrigation as a very important element in fixing the assessment of the land for which it is available. The practice is therefore as old as the survey. Next, the principle as approved since 1866 takes no account of effected improvements, but looks to the inherent quality of the field as a productive agent. The survey assessments are not based on an estimate of the produce or designed to secure for Government any fixed proportion of it. They aim at a true estimate of the relative capacities of fields in giving a return to average expenditure and labour. Some capital and labour must be expended to raise any crop at all. If the cultivation is slovenly, the assessment may doubtless absorb a considerable part of the rent, if the

cultivation is of average quality, the assessment will be a fair and moderate charge, if a higher degree of skill and capital is applied, the assessment will be a trifling percentage on the net profits. It rests mainly with the cultivator to decide what proportion the assessment shall bear to his receipts, and if he increases his receipts by the outlay of money and industry, the Government demand does not rise in consequence as it would under the Batai system. The cultivator enjoys the profits of his improved agriculture. But while he is assured that the assessment will not rise in proportion to his receipts, it is on the other hand obviously reasonable that a field which will make a large return to capital and labour should be rated at a value somewhat higher than a field which has not the same capabilities. It must be remembered that this classification of relative values is fixed once for all at revision settlement, and is not liable to alteration except in the interest of the occupant on proof of manifest error. The valuation thus permanently established takes account of all the natural capabilities of the field. Now if a cultivator finds that his field is valued 6 or 8 per cent. higher than that of his neighbour, because of its command of water, is he thereby discouraged from digging a well to bring the water into use? Having to pay the same assessment whether he does so or not, will he prefer to pay the extra rent without availing himself of the advantage for the use of which he therein pays; or will he discount the higher assessment by obtaining a better return from his field through utilizing the water? It is clear that he will not only not be discouraged, but will even be stimulated to utilize the subsoil water by this method of assessment.

29. It has even been argued that subsoil water is not an element of relative value which the Government is entitled to take into account. But as subsoil water is a natural advantage of land which is capable of returning a large profit on capital and labour, it may clearly be taken into account with other natural advantages in an estimate of value which is based on the capability of a field as an agent of production and not on the actual produce. Water advantage equally with soil advantage raises the natural value of the field, and capital and labour must be used alike to utilize either. But in neither case is the assessment adjusted in proportion to the profits realized by expenditure of capital and labour. Higher classification value represents higher natural capability apart from the use to which it is put, and the extra assessment resulting from higher classification value is the difference between the payment for the use of a field of high and a field of low capability.

30. If the argument be that this capability should not be taken into account until it is used, then the same argument may be applied to all the other capabilities of the field, such as depth of soil, and the result would be exactly that which the policy of Government seeks to avoid, *viz.*, that enterprize would be taxed, good agriculture would be assessed higher in proportion than bad, and improvements would be directly discouraged.

31. The only reasonable objection is that subsoil water may be taken into account as an element of value where it is not practically available. In other words that the existence of subsoil water advantage cannot be safely inferred on any evidence short of its actual use. But this remains to be proved. The best evidence of the existence of subsoil water is doubtless its actual use, but it cannot reasonably be asserted that all land capable of irrigation by wells is already under well irrigation. If so there would be no object in offering inducements for its development, and the common statement that the Gujarát peasant has been deterred from a vast extension of well irrigation only by his misapprehension as to his enjoyment of the profits of improvements, must be purely erroneous. There is at any rate no question that in Jhálod there is a vast extent of land possessing unutilized irrigable capability. That however there may be no doubtful margin, it has been decided not to apply the extra classification to the area judged to possess irrigable capability of the lowest class. In the rest, if it is possible that mistakes may occur, on the other hand it is not proposed to continue to levy the extra percentage for water advantage on land in which it has been demonstrated by the occupant that no such advantage is inherent.

32. The principle to which the Government of Bombay has long inclined is that enunciated by His Excellency the Viceroy in the debate on the Land Improvement Loans Act of 1883 that "the right (of the tenant) to enjoy the

results of the inherent qualities of the soil is already covered by the payment of his ordinary rent, and the addition to the letting value of his land arising from his improvements may therefore be treated as resulting only from his expenditure of capital and labour." The proviso to Section 11 of that Act that "where the improvement consists of.....the irrigation of land assessed at unirrigated rates" the increase of value may be taken into account in revising the assessment after the expiration of a fixed period, applies to cases in which the unirrigated rates are nominal and take no account of the inherent facility for irrigation. But the Bombay Act I of 1865 contained no such proviso, and it was declared on authority that the Bombay Land Revenue Code (Act V of 1879) would not be construed as applying any such proviso to improvement by well irrigation. The alternative method of meeting the equitable claim of Government to a higher revenue from irrigable land is to take account of the inherent quality of subsoil water advantage in fixing the ordinary rent, and His Excellency in Council observes that no other way of solving the question seems compatible with that finality and permanence of survey classification which it is now an object of Government to secure. The ordinary rent thus fixed must of course not exceed such proportion of the net profits of fair average cultivation as the Government considers that it is justified in taking as land revenue, and His Excellency in Council finds no ground whatever for supposing that that proportion has been exceeded in the settlement of the Jhálod Mahál.

33. The proposals of the Survey Commissioner, as modified by his letter No. 1376 of July 2nd, are approved, so also are his proposals in paragraph 14 of his letter No. 910 of May 3rd, as to the introduction of the revised settlement and the duration of the guarantee.

J. MONTEATH,
Under Secretary to Government.

Section II.

Revenue Survey and Assessment: Jhálod Túluka, Panch Mahál.

No. 1144.

REVENUE DEPARTMENT.

Bombay Castle, 6th February 1885.

Letter from the Secretary to the Government of India, Revenue and Agricultural Department, No. 650-R.—59-21, dated 24th September 1884—Requesting with reference to the correspondence forwarded with letter No. 6016, dated 25th July 1884, on the subject of the settlement of the Jhálod Táluka in the Panch Mahál, that pending the receipt of the orders of Her Majesty's Secretary of State for India it may be considered whether any measures can be devised which would provide more security against the assessment of a non-existent water advantage or of one which it may prove impossible to use.

Letter from the Officiating Under Secretary to the Government of India, Revenue and Agricultural Department, No. 886-R.—59-25, dated 26th December 1884—Inviting attention to Mr. Buck's letter No. 650-R., dated 24th September 1884; and enquiring whether any measures have been devised for the protection of the agricultural population against the possible assessment of a non-existent water advantage or of one which it may prove impossible to use.

Letter from the Survey and Settlement Commissioner, No. 33, dated 7th January 1885.

RESOLUTION.—Ordered that the following letter be addressed to the Secretary to the Government of India, Revenue and Agricultural Department:—

"With reference to Mr. Secretary Buck's letter No. 650-R.—59-21, dated 24th September last, suggesting that it may be considered whether any measures can be devised which would provide more security against the results of any possible error in judgment in working the rules for classifying subsoil water advantages adopted for the Jhálod Mahál of the Panch Mahál Collectorate, I am

directed to forward for submission to the Government of India copy of a letter No. 33, dated 7th ultimo, from the Survey and Settlement Commissioner, and in doing so to say that the security against error in the assessment of water advantage (and the same remark applies to the possibility of error in the estimation of all the other data from which assessment rates are deduced in this Presidency) lies in the employment of competent and well trained agents working on careful instructions and under watchful supervision, to which must be added the further consideration that the correction of error when detected in any part of the survey results has never been refused.

"2. I am to add that, although an addition to the assessment on account of water advantage which does not exist cannot be justified on the ground that the extra charge is very trifling, yet it is fair to remark that the small extra assessment imposed on the ground of strong probability that water advantage exists and with the securities noted in the last paragraph, will certainly not raise the total assessment above the share of the profits of agriculture which Government is entitled to take as its land revenue according to usage, or absolutely above what is a fair rent charge. The revised rates in the Panch Maháls tálukas will be very moderate and there can be little doubt that they will attract agricultural enterprise.

"3. His Excellency the Governor in Council has not assumed as a matter requiring no further proof that the system pursued in Jhálod will be equally practicable in all the districts of Gujarát. The experiment will now be applied to Dholka, a táluka originally settled in 1856-57, and His Excellency in Council will await the statements and proposals of the Survey Department for the revision of that táluka, which will be judged strictly on their own merits. But with regard to Jhálod and Dohad His Excellency the Governor in Council is of opinion that no apprehension need be entertained that the revision settlements will be otherwise than highly favourable to the extension and improvements of agriculture."

J. MONTEATH,
Under Secretary to Government.

No. $\frac{650R.}{59-21.}$

FILE No. 59.
SERIAL No. 21.

FROM

E. C. BUCK, ESQ., C. S.,
Secretary to the Government of India,

To

THE SECRETARY TO THE GOVERNMENT OF BOMBAY.

Rev. & Agri. Dept.
Revenue.

Simla, the 24th September 1884.

SIR,

I AM directed by His Excellency in Council to acknowledge the receipt of your No. 6016, dated the 25th July 1884, and your subsequent letter No. 6342 of 7th August 1884, which contain the report upon the experiment made in the Jhálod Mahál of the Panch Maháls in the assessment of subsoil water advantages. The papers include a clear Resolution of the Government of Bombay on the whole question of the assessment of irrigable and irrigated lands in the Bombay Presidency, giving a full account of the phases through which the discussion on the subject has passed.

2. The general result of the consideration which the Bombay Government has given to the question seems to be that, in view both of the general policy of encouraging well construction, and also of the pledges already given, it is desir-

able to exempt wells in future from assessment, but that there is nothing to prevent the assessment of subsoil water advantages within certain limits. In the case of the Jhálod Mahál, the plan has been adopted of removing the special assessment on land already irrigated by wells, and of assessing the whole Mahál uniformly under rules drawn up for the purpose in the Settlement Department.

3. The Government of India does not desire at the present stage to enter into any full discussion of the important issues raised by these papers, and it recognizes the moderation with which, in the case of the Jhálod settlement, the assessment of water advantages has been made. But after a careful examination of the rules drawn up in the Settlement Department with reference to the Jhálod assessement, it desires to communicate to the Bombay Government its apprehension that they may not sufficiently safeguard the agricultural population against the assessment of a non-existent water advantage or of one which it may prove impossible to use. I am therefore to request that, pending the receipt of the orders of Her Majesty's Secretary of State on the Jhalod case, it may be considered whether any measures can be devised which would provide more security against the results of any possible error in judgment. The Government of India would be unwilling to pronounce any definite opinion on the whole question until this point has been more thoroughly considered.

I have the honour to be,

SIR,

Your most obedient Servant,

E. C. BUCK,

Secretary to the Government of India.

No. $\frac{886 \text{ R.}}{59-25.}$

FROM

C. S. BAYLEY, ESQ., C.S.,

Officating Under Secretary to the Government of India,

To

THE SECRETARY TO THE GOVERNMENT OF BOMBAY,

Calcutta, the 26th December 1884.

SIR,

The Secretary of State having in his despatch No. 38 (Revenue), dated 20th November last, approved the scheme set out in the Resolution of the Bombay Government, No. 6015, dated the 25th July 1884, for the assessment of subsoil water advantages, I am directed to invite attention to Mr. Buck's letter No. 650 R., dated the 24th September 1884, and to enquire whether any measures have been devised for the protection of the agricultural population against the possible assessment of a non-existent water advantage or of one of which it may prove impossible to use.

I have, &c.,

C. S. BAYLEY,

Officiating Under Secretary to the Government of India.

No. 33 of 1885.

From

T. H. STEWART, Esquire,
Survey and Settlement Commissioner;

To

The SECRETARY to GOVERNMENT,
Revenue Department.

Survey Commissioner's Office, Ratnágiri Districts,
Camp Suseri, 7th January 1885.

Sir,

I have the honour, as requested in your endorsement No. 7877, dated 4th October 1884, to report on the question raised in the letter of the Secretary to the Government of India, Revenue and Agricultural Department, No. 650 R. —59-21, dated 24th September 1884, as to whether in the rules for classifying subsoil water advantages in the Jhálod Mahál the occupant of land is sufficiently safeguarded against the results of possible error.

2. In considering this question it is necessary to keep in view the fact that the expressed policy of Government is to distinguish by a trifling increase to the soil classification those lands which are believed to have readily usable subsoil water facilities and not to impose upon them anything in the shape of a garden rate. In the natural bágáyat system which has been introduced into the later settled districts of Gujarát, a separate system of classification and assessment was applied to certain lands which were manifestly possessed of very remarkable facilities for raising garden crops, and a rate was imposed upon them which the occupant could not afford to pay unless he made use of the facilities within his reach. In the present system, on the other hand, the predominating idea is that the extra assessment resulting from the classification for the extra advantage shall be so inconsiderable that the total assessment of the land will not absorb a larger portion of the true rent than might fairly be demanded on the land under any circumstances, or, in other words, that the cultivator will be able to pay the assessment with ease whether he uses the advantages within his reach or lets them remain dormant. And I think I may fairly point to the settlements of Jhálod and Dohad as showing the moderation with which the extra assessment has been imposed. An addition all round to the dry-crop lands possessing the extra advantage of 1 anna to 1 anna 3 pies per acre can scarcely be said to imperil the principles upon which the rates under the Bombay survey system are fixed, that a large share of the net profits of his cultivation should be left to the cultivator after the share of the State is satisfied.

3. There is of course room for error in the classification of subsoil water advantages according to the system employed in Jhálod, although the rules sanctioned by Government allow no valuation to be made without evidence to back it and every usual safeguard is adopted. The possibility of error is admitted by Government in the engagement they make to reduce the added annas in any case where by actual attempt the cultivator has demonstrated that the advantages he has been assessed for do not exist wholly or in part. But when it is remembered that the utmost error which a classer could have fallen into in the subsoil water classification of Jhálod extends from 2 annas down to 6 pies, and that in the valuation of soil alone he had a scope for error of from 16 annas to 1 anna, it seems to me that if any special safeguards are to be adopted, that is to say, if any ordeal to test the correctness of the classification of subsoil water is allowed, the same precaution should "*á fortiori*" be extended to the classification of the soil also, and there would be no end to the settlement of the disputes which would result. At present Government in the position of a landlord makes every attempt through its paid and experienced land-valuators to ascertain the productive capabilities of the land, and it only acts as any landlord,

and especially an Indian landlord, would act in appreciating those lands which are believed to have irrigable facilities at a trifle higher than those lands which have no signs of possessing such advantages.

4. The safeguards which do exist under the rules, and which I think must greatly reduce the chances of error within the 2 annas maximum, may be summed up as follows:—

I.—The classification is made not only field by field, but share by share of a field, that is to say, the extra valuation is not extended to the whole field at once, but each of the shares adopted for soil classification is given a separate valuation and an average is struck thereon.

II.—The classification is carried out by experienced paid land-valuators working under the eye of a highly paid responsible Assistant Superintendent of Survey and Assessment. In the case of Jhálod it was superintended by the Deputy Superintendent himself.

III.—The work of the paid valuators is tested in the field by the Assistant Superintendent in charge of the party.

IV.—No extra valuation is permitted unless founded upon the distinct evidence required by the rules.

V.—No extra valuation is placed upon land unless the evidence shows it to have subsoil water facilities within easy reach. (Twenty-two feet from the surface was the limit of depth in Jhálod within which subsoil advantages were declared assessable.)

VI.—The assessment resulting from the extra classification is kept so low as to cause an increase in the Government demand scarcely perceptible to the cultivator among the other modifications of his assessment expected at a revision of rates.

VII.—The increased valuation for subsoil water advantages is separately shown from the classification of the soil and can be deducted in whole or in part as soon as the classification is shown to be defective.

I think it will be admitted that to obtain once for all a true valuation of all lands which will include all advantages affecting productiveness, so as to do away with the special taxation of lands in which the facilities have been actually used, even to the degree of placing them on the highest dry-crop level, no trouble is being spared and no reasonable precaution is being neglected.

5. As regards the natural bágáyat classification of certain lands in the later settlements of Gujarát, I do not find that any special safeguard was accorded beyond that of careful diagnosis and test by experts working under precise rules. It does not appear that the classification was disputed to any appreciable extent. It was chiefly used in five tálukas of the Surat Collectorate and the cases quoted by Mr. Bulkley, the Deputy Superintendent, in which the assessments have been altered, are very few. In the Jalálpur Táluka, where the finest "natural Bágáyat" lands are found, altogether 2,774 acres were placed under the special valuation and the assessments imposed amounted to Rs. 40,179 or on an average Rs. 14½ per acre. The scale of assessments extended from Rs. 24-6-0 per acre down to Rs. 6-8-0; yet in this táluka Mr. Bulkley shows that not a single case of abandonment of land has occurred on account of erroneous classification.

I have the honour to be,

Sir,

Your most obedient Servant,

T. H. STEWART,
Survey and Settlement Commissioner.

Section III.

Memorandum No. 686, dated 3rd December 1884, from Mr. Bulkley, Deputy Superintendent, Revenue Survey, Gujarát, to the Survey Commissioner.

The undersigned presents compliments to the Survey and Settlement Commissioner and has the honour to forward a draft set of rules for the classification of subsoil water advantages in the Khálsa villages of the Dholka Táluka, for approval and instructions.

A. S. BULKLEY,
Deputy Superintendent, Revenue Survey, Gujarát

Letter No. 334, dated 20th June 1885, from the Deputy Superintendent, Gujarát Revenue Survey, to the Survey Commissioner.

I have the honour to forward herewith a re-draft of the rules for the classification of subsoil water in the *Khálsa* villages of the Dholka Táluka, framed on the verbal communications held with you in Surat on the 4th instant, and the contents of your demi-official letter of 11th instant.

2. I also submit a memorandum on the indications of subsoil water in the different parts of the Dholka Táluka, and a map on which the localities in which the respective orders or qualities of water are believed to predominate are shown by different colour-washes.

I have the honour to be,
Sir,
Your most obedient Servant,
A. S. BULKLEY,
Deputy Superintendent, Revenue Survey, Gujarát.

Revenue Survey and Assessment: Rules for the classification of subsoil water advantages in the Dholka Táluka of the Ahmedabad Collectorate.

No. 6342.

REVENUE DEPARTMENT.

Bombay Castle, 6th August 1885.

Letter from the Survey and Settlement Commissioner, No. 1273, dated 8th July 1885:—

"In anticipation of the partial re-classification of the soils of the Dholka Táluka of the Ahmedabad Collectorate sanctioned under Government Resolution No. 5948, dated 10th August 1883, I have the honour to forward a paper of rules which it is proposed to adopt for the classification of subsoil water. These rules were originally drawn up by Mr. Bulkley, Deputy Superintendent, Gujarát Revenue Survey, after a lengthy stay within the limits of the táluka and were accepted by me with a few amendments after I had visited the táluka and consulted with experienced Survey and Local Revenue officers on the spot.

"2. It will be seen that the rules divide the subsoil water of the táluka into four distinct orders according to quality, the classes subordinate to each order being fixed by depth of water from the surface. In this arrangement a material difference will be observed from the rules under which the subsoil water was classed in the Dohad and Jhálod Tálukas of the Panch Mahals. In those tracts the water is uniformly sweet and the 'orders' were therefore fixed according to the greater or lesser prevalence of well irrigation in the tract and the facility with which water could be reached as evidenced by the difficulties encountered in sinking existing wells. In Dholka, however, although water is everywhere found within a short distance from the surface and is reached with comparative ease, the quality is variable ranging from sweet throughout the year and admirably suited for the cultivation of the best garden crops to a brackish water gradually becoming salt as the season advances, which is only used for

inferior crops such as 'Jao' and occasionally for wheat. Mr. Bulkley has forwarded a short note on the indications of subsoil water in the Dholka villages which will come under re-classification and has forwarded a map of the táluka showing the localities in which the different orders of water are believed to be predominant. From my own enquiries I could suggest a few small alterations in the colouring of this map, but as the distinctions made are in general accordance with experience, I have not thought it necessary to do so, especially as present belief is liable to be much modified by the further experience we shall gain at the actual classification when every indication of subsoil water-supply will be tested and valued.

"3. Although it is believed that within the areas distinctively coloured there will be found large well-marked tracts of country with subsoil water invariably of the quality indicated by the particular colour on the map, there will undoubtedly be found equally well defined tracts in which the quality of the water will not be uniform and in which wells with water of one or even two lower orders will be found intermixed with wells of the predominant quality. This is not always phenomenal, because it not unfrequently happens that a cultivator in his greed to add to the capacity of his well oversteps the depth which his more prudent neighbours have gone down to, and finds that he has penetrated into a stratum of inferior water. The danger, however, is there and must be recognized and the treatment of lands containing no wells in a tract of varying orders of water as exhibited by existing wells is the chief difficulty which these rules have to meet. It is proposed in tracts where variations in quality are found to exist that the subsoil water of all fields without wells shall be given the value of the order next lower to that of the nearest field containing a well the subsoil water value of which shall have been ascertained by actual test. In this way the danger indicated by the proximity of wells containing water of lower orders is not only recognized but liberally allowed for. Of course the wells which indicate want of uniformity in the subsoil water of a tract will be carefully tested by the officer in charge of the classing party to make sure that the differences of quality recorded are real and appreciable.

"4. Of the villages which are not coloured at all on the map the great majority are Tálukdári and do not come under the ordinary revenue settlement. But scattered among them are a few villages which belong to Government, the lands of which it is not intended to bring under classification at all for subsoil water facilities for the simple reason that the subsoil facilities are not utilized and are not likely, as far as we can foresee, to be utilized for irrigation. In these villages the soil is of a black clayey description and admirably suited for the growth of 'Chasia' wheat, *i. e.*, wheat grown with rainfall moisture only. Irrigation is never practised as it is doubtful whether greater profit could be made by its aid, while it is probable that an extensive use of the subsoil water which is more or less brackish would have an injurious effect on the variety of soil which prevails. It is therefore proposed to exempt such villages entirely from classification for subsoil water. Rules 4 and 5 are additional safeguards inserted for the first time in these rules to prevent soils of the poorer qualities from having anything added to their valuation on account of subsoil water and to secure soils from being assessed for facility of well irrigation where owing to their want of consistency and friability it has been found impossible to sink a well in them.

"5. These rules do not apply to 'bháta' and 'Dhekudiat' lands, to which special rules will be applied, but to lands of all other kinds, which will be examined carefully and classed on their merits. These so-called rules are really little more than general principles; if as such they meet with the approval of Government there will be no difficulty in putting them into practice.

"6. The values in annas applied to the several classes of subsoil water in the scale appended to the rules by Mr. Bulkley are not intended to be used as they are, but only to show the relative value of each class. The actual values to be assigned to each class will be part of the settlement proposals."

RESOLUTION.—The rules appear to be discriminating and judicious and the use of them as embodying the general principles to be applied in the revision survey is approved.

J. MONTEATH,
Under Secretary to Government.

Memorandum on the subsoil water of Dholka Táluka Villages.

1. The quality of the subsoil water useful for irrigation in the *khálsa* villages of the Dholka Táluka varies considerably, but the respective varieties are for the most part found to predominate in and even to be confined to localities fairly well defined by the physical features of the country.

2. The highest quality of water is met with in the lands of the richest natural soil, which prevails more or less in the villages forming the north-east quarter of the táluka. This tract is shown on the táluka map appended by a wash of pink colour and comprises the following villages :—

Badarkha.	Ambliala.
Kavitha.	Maplipur.
Chaloda.	Jalálpur Wajifs.
Saroda.	Dholka Kasbo.
Adasar.	Ránada.
Chandisar.	Shekhdi.
Wásnákelu.	Chak.

3. A quality of water slightly inferior to that first mentioned in respect of being not perfectly sweet, but used for raising most of the same descriptions of garden crops and some others less valuable, is found to predominate in the locality shown on the map by a wash of yellow colour comprising the following villages :—

Santhal.	Rámpur.	Khatripur.
Ambethi.	Sahej.	Wantha
Girand.	Ingoli.	Dugari.
Ganesar.	Paldi.	Bhetawáda.
Trasad.	Andhári.	Sindhraj.
Juval Rupávti.	Rajoda.	Salajda.
Rasain.		

4. In the tract shown by a wash of green colour the quality of the water is such as to be capable of raising in the lands available for irrigation crops of no higher class than barley and wheat. The water is often sweet throughout the season of using it for irrigation, which closes by the end of February. The probability is that if the wells in use, mostly *kacha*, were sunk deeper and the period of working them more protracted, the water would be brackish at an early stage and become more so as the season advanced. The villages in this tract are :—

Devdholera.	Wásna-Nánodra.
Kersandi.	Kavla.
Nánodra.	Sakod.

5. In the tracts shown on the map by a wash of sepia colour the predominating quality of the subsoil water procurable for irrigation is brackish ranging from drinkable to almost salt. The crops raised are for the most part barley and occasionally wheat. The villages comprised are as follows :—

Bávala.	Rupal.	Jekháda.
Kerila.	Bhaila.	Ránesar.
Hasanagar.	Dehgámda.	Kocharia.
Adroda.	Dhanwáda.	Sakodra.
Shiawáda.	Jaláput.	Godhneshvar.
Walthera.	Kariana.	Sarandi.
Khánpur.	Mujpur.	Hasanpur.
Dádusar.	Ambareli.	Simaj.
Kanka.		

6. The *khálsa* villages left uncoloured are those in which, with perhaps hardly an exception, irrigation has not been and is not practised at all, partly because the lands grow "*chasia*" wheat almost entirely and partly because the subsoil water is found from experience to be too salt to be worth spending money and labour on attempts to utilize it for irrigation.

(Signed) A. S. BULKLEY,
Deputy Superintendent, Revenue Survey, Gujarát.

True Copy.

T. H. STEWART,
Survey and Settlement Commissioner.

Rules for the classification of subsoil water advantages of lands in the villages of the Dholka Táluka, Ahmedabad Collectorate, approved in Government Resolution No. 6342, dated 6th August 1885.

1. The subsoil water of culturable lands of the Dholka Táluka varies in quality considerably, from perfectly sweet to salt and quite undrinkable. For purposes of classification it may be considered in the four distinct orders described below :—

Order I.—Quite sweet throughout the year. Used for raising the most valuable descriptions of garden produce.

Order II.—Slightly brackish but quite drinkable and continuing so throughout the year. Used for the most valuable garden crops, generally, and also for other rather inferior descriptions.

Order III.—Sweet at the commencement of the season and for as long as the crops raised need irrigation. Also brackish, at the first, and becoming still more so as the hot season approaches. Both used for wheat and barley crops only.

Order IV.—From the first so brackish as to be undrinkable and turning to salt later on. Used only for barley and occasionally for wheat crops.

2. The quality of the water of each existing well must be tested by testing, and regard must at the same time be had to the nature of the crops heretofore and at present raised under the well. The order in which the water is to be classed must be determined on a careful consideration of both results.

3. Where in any tract in a village which is well defined and of uniform character of soil, the subsoil water is shown by that of the wells existing in it to be of uniform quality, every survey number in it as yet without a well shall have its subsoil water classed in the same order as that of the survey numbers that have wells in them. But where in the case of a tract well defined and of a uniform character of soil, the subsoil water is shown by the existing wells to be not everywhere of one and the same order, those numbers which have no wells but which are believed to possess assessable facilities for well irrigation shall have their subsoil water placed in the next lower order to that of a field adjoining or near containing a well the subsoil water of which has already been classed in its proper order according to its actually ascertained merits.

4. If it is found in any village or well defined tract that the cultivated lands are entirely of black clayey soil growing as a rule only "*chasia*" wheat crops and that the only wells existing are used exclusively for drinking purposes, irrigation from wells being unknown and unpractised, none of the lands of such village or tract shall be classed for subsoil water advantages.

5. Lands, whether dry-crop or rice of any order of soil, of a soil classification value below four annas shall be exempt from classification for subsoil water advantages.

6. Should a survey number be met with of a soil so sandy for a considerable depth from the surface that its excavation for the purpose of making a well is impracticable owing to the soil constantly falling in, this fact being not merely alleged but also established by instances of attempts in it and adjoining numbers having proved failures, it shall not be classified for subsoil water advantage even though its soil classification value exceeds the minimum standard fixed for exemption in Rule 5.

7. The classes in each order are to be regulated by the several depths from the surface of the field to the subsoil water, and these depths have been fixed as shown below.—

Depth to subsoil water.	Class.
Up to 24 feet inclusive	A
Over 24 feet and up to 34 feet inclusive	B
Over 34 feet and up to 45 feet inclusive	C

All lands in which the depth to subsoil water is beyond the maximum number of feet fixed for Class C shall be exempt from classification for subsoil water advantages.

8. With reference to Rule 5, should a survey number be met with of which the soil varies greatly in different parts and the average classification anna value of which falls below the minimum value of 4 annas, such parts of it as are of that minimum anna value or above it shall be classified for subsoil water advantage on their own merits, the other portions below that value being exempted.

9. The feet for the depth to water of a survey number which has a well in it used for irrigation or drinking purposes being ascertained by measurement, those to be recorded for the survey numbers next adjoining and other numbers in the same tract having no wells shall be fixed with reference to the difference in level, if any, between it and that of the irrigable area in each of these numbers.

10. The relative anna values of the orders and their classes are shown in the scale appended.

11. The preceding rules are not to be applied to bhâta lands, and lands that have been irrigated or that may be adjudged capable of being irrigated at pleasure by *dhekudis* erected on the banks of river and streams.

Scale showing the anna value of classes in each order of subsoil water as fixed by the depth from surface to water.

Order I.			Order II.			Order III.			Order IV.		
Class A.	Class B.	Class C.	Class A.	Class B.	Class C.	Class A.	Class B.	Class C.	Class A.	Class B.	Class C.
As.	As.	As.	As.	As.	As.	As.	As.	As.	As.	As.	As.
4	3½	3	3½	3	2	2	1	½	1	½	...

Extract para. 15 of Mr. Bulkley's report No. 118, dated 1st March 1887, on the Revision Settlement of the Dholka Taluka.

15. All lands other than *dhekudiat* and *bhâta* which after careful inspection and consideration have been adjudged to possess an available profitable subsoil water-supply, have had that advantage valued according to a code of rules drawn up for the purpose and approved by the Survey and Settlement Commissioner and by him submitted to Government, and the use of which as embodying the principles to be applied in the course of the revision settlement of the táluka has been approved by Government in its Resolution No. 6342, dated 6th August 1885. Along with these rules a memorandum on the indications of subsoil water in the táluka accompanied by a map so as to illustrate the localities in which the various qualities of water prevail was forwarded to the Survey and Settlement Commissioner. The experience gained in the course of this work in the field showed that the anna values of the "classes" of subsoil water applied in the original rules framed for this special classification might be reduced, and the range of those values according to which the enhancement of the soil valuation should be effected was accordingly modified and fixed by the Survey and Settlement Commissioner at from 2 annas to 6 pies. The result of the assessment at the revised rates to be proposed, calculated on the above mentioned reduced valuation, is that the average incidence of such enhancement of the soil assessment per acre of occupied Government land adjudged to possess subsoil water advantage will be 2 annas and 10 pies and will produce a gross revenue of Rs. 7,200 as compared with Rs. 6,000, which was the amount of the special water assessment imposed in 1885-86 on Government irrigated land by the levy of a water-bag rate varying from Rs. 10 to Rs. 3.

Extract paragraph 3 of the Collector of Ahmedabad's Memo. No. 746, dated 26th March 1887, submitting remarks on the Revision Settlement of the Dholka Táluka.

3. Government has decided upon the subsoil water system and it is useless to discuss this question. It seems to have been fairly applied to this revision, but the result in one case has been unfortunate. I refer to Kesrandi, a village standing at the end of Class III, which by the operation of this subsoil water system has been raised 64 per cent. from Rs. 3,320-12-0 to Rs. 5,444-8-0. From my knowledge of the village and of the class of Kolis who mainly cultivate it, I feel sure that this is far too high, and I would therefore recommend that it be put into Class IV.

Extract paragraphs 6 to 17 of the Survey Commissioner's report No. 900A, dated 23rd May 1887, submitting remarks on the above correspondence.

Substitution of separate water-assessment on dhekudiat land and assessment for subsoil water command in lieu of bag-rate on wells and dhekudis.

6. This last item of the operations of the revision survey is its special feature and merits full discussion and description. The object as regards dhekudiat and other land is similar. Irrigational facilities are now assessed by levying a tax on dhekudis in the former and on wells of the latter. The difference is that in the one case it is proposed to substitute for the bag rate on dhekudis a *water-assessment* spread over the area commanded by them and for the bag-rate on wells an enhanced *soil* valuation based on the increased value of the soil due to the command of subsoil water. The abolition of a special well assessment—"an oppressively heavy tax on those who expend capital and labour in bringing the water into use"—has been decreed, both with the object of more fairly distributing the revenue claimable by Government for facilities for irrigation and also with the object of securing as far as possible finality and permanence of the soil valuation, now being revised. But the applicability of the new principles as regards each particular táluka which comes up for revision will require the most anxious consideration. I do not then agree with the Collector that it is useless to discuss the subsoil water-assessment system. But I may say at once that I have formed an independent opinion that it is the best system for assessing irrigational facilities in Dholka. I proceed to show my reasons.

Peculiar features of Dholka, making assessment of irrigational facilities unusually difficult.

7. The difficulty of rightly assessing irrigational facilities in Dholka is exceptionally great. In places the water-bearing strata are so close to the surface that water is available at a very small cost. In such localities *kacha* wells suffice, but these generally last only one year. In other places the soil is so loose that permanent wells are impossible. Here the *kundel* or tile well, lasting 4 or 5 years, is used. It is in the end costly, compared either with a purely kacha or pakka well. Where permanent wells are possible there is danger that the water may become too brackish for irrigation. There is danger that the water, even in the vicinity of a well containing sweet water, may be found brackish, though such a result is generally due to digging too deep and tapping a brackish substratum. In places, again, the salt impregnation (*khár*) in the soil is so great as to make irrigation positively injurious. This is frequently the case where water is found closest to the surface. Finally, the duration of even the best built wells is uncertain. This point has been prominently noticed by Captain Wingate (Appendix, p. 57, s. 7). There is no garden land in Dholka in the usual sense of the word. There is everywhere danger of bringing up salt if the same piece of land is continuously irrigated. But with this disadvantage a largely counterbalancing facility exists in *gorádu* soils. It is the facility of training water to great distances in open channels without appreciable loss by percolation. The *gorádu* is the soil most suitable and remunerative for irrigated crops. It has

less tendency to *khár* than black soil. Thus it arises that there almost everywhere exists in lands commanded by wells a rotation between irrigated and dry-crops.

The mode adopted at the original settlement.

8. The necessity of abandoning the old *bhágvatái* and *jinnasvár bighoti* systems of realizing the Government revenue led to the necessity of devising other means than the easy and simple ones possible under those systems of assessing irrigational facilities.

Mr. Rogers thought there were four possible methods. He rejected any plan of fixing a water-assessment on any defined area of land commanded by a well chiefly on account of the peculiarities of Dholka above noticed. He rejected a water-rate to be levied only when irrigation was actually used, or a rate similar to the *jinnasvár bighoti* to be levied by measurement on crops raised by irrigation even though it could be graduated according to the character of the crop, because both these plans would require annual inspections and would expose the occupants of the soil to constant interference of subordinate officials, and would thus open the door to fraud and collusion.

The plan finally adopted was that called the "bag rate" or a fixed levy on each water-bag actually used for irrigation. By this plan annual inspection and interference were reduced to a minimum. It was a plan which appeared suitable to the special conditions of Dholka. It discounted the liability of sweet water to deteriorate and of wells to fall in and the necessity for an interchange between dry and wet crops.

The bag rate, a failure.

9. Though Mr. Rogers admitted that it would throw temptation in the way of cultivators to conceal the number of bags worked, he did not anticipate or suspect a device which experience has shown up, by which, whereas the bag rate was calculated on the number of acres which could be irrigated in an ordinary working day, the rayats by using relays of bullocks worked night and day, thus really paying very much less than what it was intended they should pay.

I do not think that this is enough to condemn the bag rate. But there is another objection far more weighty. The alienated land is interspersed among the khálsa fields. This land in area is not far short of half the gross area. Its peculiar history can be gleaned from the papers now submitted. But the bearing it has on the subject now under discussion is this, that the bag rate, which cannot be charged on wells in alienated land, does not secure to Government any revenue from the irrigation of Government land from alienated wells though the water used may be actually drawn from the subsoil underlying the khálsa lands. Any attempt to obviate either of these two defects in the bag rate system would at once necessitate the very objectionable annual inspections and interference of subordinate officials.

Finally, the bag rate is after all a tax oppressively heavy on those who expend capital and labour in bringing the water into use. The bag rate, which has now been tried for 30 years, has not succeeded in inciting the cultivators to dig more wells as it was hoped it would incite them. Appendix D contains some information. Such as it is, it points to this conclusion, for there were at the time of the old settlement 2,223 wells, all told, and are now only 2,360. Further, the increase (137), small though it is, is practically confined to the villages in Mr. Bulkley's first class in which the number of wells (including drinking wells) has risen from 1,564 to 1,692, an increase of 128. The apathy of the cultivators may be one reason for the small increase.

The abolition of the bag rate and the substitution of an assessment based on the command of water will finally settle the question of the legality and policy of its application to kacha wells dug during the currency of a settlement, which question was a subject of controversy for 12 years till the passing of Government Resolution No. 5815, dated 18th July 1884.

Analogy in the Baroda State Survey.

10. I think that considerable evidence of the difficulty of asssesing irrigational facilities in Dholka may be gleaned from the action lately taken in the not dissimilar tracts of the Baroda State in South Káthiáwár. A perusal of

Mr. Elliot's report lately published will further give strong corroboration of the suitability of the subsoil water-assessment system. The features common to Dholka and the Amreli Panch Mahâls are,—

(1) the absence of real garden land owing (*a*) to the risk of increasing the *khár* in the surface soil, which provides plant food, by over-irrigation, and (*b*) the necessity of a rotation between dry and wet crops;

(2) the facility for training water in channels to long distances;

(3) the danger of encouraging irrigation in some tracts, especially of black soil, where *khár* is very abundant and easily brought up;

(4) the liability of wells to become brackish;

(5) the plentifulness of water within easy reach at a trifling cost.

In some places Mr. Elliot adopted Mr. Rogers' first method of imposing a separate water-rate on a defined area, allowances being made for periodical interchange between dry and wet crops and for the quality of the water. In others, where sweet wells and bitter were found interspersed, where the channels could be made very long and where risk from over-irrigation was marked, Mr. Elliot was led to abandon the taxation of irrigational facilities altogether and to obtain what he considered a fair revenue from a soil classification. "Lay," he said, "the tax on the land only and let the people follow their own sense of what is beneficial to them."

In the later settlements, however, Mr. Elliot practically adopted the subsoil water system of the Bombay Revenue Survey. His action was not imitation but the result of his own experience in dealing with the earlier settled tracts. He first tried the plan of adding to the soil classification annas, a valuation for the facility of utilizing subsoil water in a tract where all the land was irrigable, and where all had at some time or other actually been irrigated. Later on, the same system was applied to lands not so fully irrigated, due allowances being made for the quality of the water and other relevant factors, in a way which is precisely that which has been established by Mr. Bulkley in Dholka. I adduce this evidence because its independence is so marked and because its relevancy is so clear. It may be that several systems applied severally to various tracts may be better than one for all, but if an uniform system is needed, as it is in my opinion for Dholka, there can be no question now as to which to select.

The difficulties should be faced and not be permitted to suggest a valuation based on the quality of the soil alone.

11. I do not think that it will be seriously urged by any one that the difficulties inseparable from any system of assessing irrigational facilities should induce the plan of giving up the attempt altogether. Such a course would not be fair, because then the enhanced revenue would have to be based exclusively on the soil valuation. The question whether and what enhanced revenue is due stands on different grounds, and will be discussed in its place. An assessment based on the valuation of the soil alone would press most unduly on soils where irrigation is risky or positively harmful, and it would at the same time as unduly benefit lands possessing the command of water for irrigation at the cost of others less favoured. It would not be an assessment based on the productive capability of the land and would be an unfair distribution of the revenue demand.

Experience in settlements made after Dholka.

12. I am bound to notice that Mr. Rogers abandoned the bag rate when he came to deal with the Jetalpur Pargana in 1859. His reasons were, I think, sound, though they do to some extent indicate a growing distrust of the bag rate system. He found in Jetalpur an absence of many of the peculiar features of Dholka and stated clearly that the bag rate system in Dholka would not have been approved but for the existence of these features. He found less tendency to brackishness in the water of these wells, and he found that the right to water from wells was more defined than in Dholka. (I have not noticed this as one of the peculiar features of Dholka. It did not attract great attention till after Dholka was settled, but it did cause difficulty even there. The land which naturally would be the most often irrigated from a well was often not irrigate

because the occupant could not claim the right to use the water.) In Jetalpur, then, Mr. Rogers adopted what is entered as the first of the four possible alternatives, viz., "a rate fixed on the field to be levied whether the whole or a portion of the land be cultivated with any kind of crops." On page 48 of the Appendix, the advantages and disadvantages of the system are enumerated.

Advantages.—(1) Convenience of administration; (2) stimulation of well irrigation.

Disadvantages.—(1) Low rating on account of the necessity of alternation of dry and wet cultivation;

(2) Unsuitability where the water tends to brackishness and where wells are liable to fall in.

(3) Risk of error owing to the difficulty of ascertaining the right to water.

All these disadvantages more or less appear to have been absent in Jetalpur and consequently a plan of assessing irrigational facilities was found feasible, which also was more in consonance with the principles of the Joint Report.

The assessment for command of subsoil water is suitable to Dholka. Its financial effect.

13 I think then that the applicability of the subsoil water assessment system to Dholka is fully patent. I now turn to the results of its application. These are shown in the Deputy Superintendent's 15th paragraph. The revenue which will accrue from the introduction of the proposed subsoil water classification is Rs. 7,200, or 2 annas 10 pies per acre of land adjudged to possess in a greater or less degree facilities for irrigation. This compares favourably with the present irrigation revenue from the bag rate which amounts to Rs. 6,000, but, as has been shown, this revenue is considerably less than Government intended and had a right to expect. The following table exhibits the results:—

Calss.	Government Dry-Crop Land.						Government converted Dry-Crop (or new Rice Lands).						Government old Rich Lands.					
	Subsoil Water Land.		Rate per Acre.	Non-subsoil Water Land.		Rate per Acre.	Subsoil Water Land.		Rate per Acre.	Non-subsoil Water Land.		Rate per Acre.	Subsoil Water Land.		Rate per Acre.	Non-subsoil Water Land.		Rate per Acre.
	Acres.	Assessment.		Acres.	Assessment.		Acres.	Assessment.		Acres.	Assessment.		Acres.	Assessment.		Acres.	Assessment.	
		Rs.	Rs. a. p.		Rs.	Rs. a. p.		Rs.	Rs. a. p.		Rs.	Rs. a. p.		Rs.	Rs. a. p.		Rs.	Rs. a. p.
I. ...	18,967	44,461	2 5 6	5,492	11,876	2 2 7	924	2,775	3 0 1	262	880	3 4 6	2,083	9,963	4 12 6	827	3,524	4 4 2
													Old rate...		3 14 6			
II. ...	10,535	20,689	1 15 5	16,624	29,593	1 13 6	742	2,043	2 12 1	329	777	2 5 9	1,943	9,541	4 14 7	723	3,217	4 7 2
													Old rate...		4 2 3			
III. ...	3,112	4,877	1 9 1	5,971	9,378	1 9 2	172	462	2 11 0	226	534	2 5 10	667	3,169	4 12 0	281	1,290	4 9 5
													Old rate...		3 10 3			
IV. ...	4,293	4,941	1 2 5	8,050	10,491	1 4 10	103	268	2 9 8	19	36	1 14 4	1,421	6,780	4 12 4	272	1,047	4 13 7
													Old rate...		3 15 8			
V ...	761	506	0 10 8	2,161	1,531	0 11 4	5	3	0 9 7	2	3	1 8 0	134	433	3 3 8	61	288	4 11 6
													Old rate...		3 9 0			
	37,668	75,474	2 0 1	38,298	62,869	1 10 3	1,946	5,551	2 13 8	838	2,210	2 10 2	6,248	29,886	4 12 6	2,164	9,366	4 5 3

It will be noticed that the acre incidence in some groups on dry-crop land is less on the portion not assessed for subsoil water command. This is due to differences in the soil classification. But the fact that such differences hide the effect of the additional soil increment for command of water is evidence of its light incidence. The net result will be a great boon to the payers of the bag rate, and they are the rayats who merit most consideration. It will not be perceptible to others. There is abundant evidence that the new element of valuation has been apportioned with due appreciation of the peculiar conditions of Dholka. The most important element is the degree of liability of the water to brackishness. On this liability the orders of water have been based. The next most important element is the distance to water. On this the sub-orders or classes are regulated. As

Safeguards in application of the system.

Mr. Bulkley shows, the highest value in the classification scale is 2 annas. The lowest is 6 pies. The intermediate graduation has been fixed with care. Where the water is perfectly sweet it has been taxed to a depth of 45 feet, but where only fit to grow irrigated barley, no valuation is assigned for a depth over 24 feet. More than half the dry-crop area has been found not to come within reach of the assessment.

The best evidence available to the classers was, of course, the quality and depth of the water of existing wells. All that is known as to the geology of Dholka tends to show that this evidence is unusually trustworthy. But, for the sake of caution, several modifications, all in favour of the soil, were directed. Thus, where in a well-defined tract the quality of the water of existing wells was found to be not uniform, fields not possessing wells were put in the order indicated by the lowest order applicable to existing wells. Poor lands classed for soil below four annas, and lands, where the sandy nature of the soil makes well-digging impracticable, were entirely exempted. Similarly, where there were indications that irrigation, though possible, might be injurious, the water class was omitted.

It remains to be seen whether the action now taken in this respect will encourage increased utilization of water for irrigation. It at any rate is an honest and straightforward attempt to carry out a system universally admitted to be theoretically sound and claimed to be practically suitable to Dholka.

Dhekudiat assessment.

14. As regards dhekudiat land, it is proposed to abandon the bag-rate system and substitute a separate *water* assessment to be levied on the area now adjudged to be irrigable by dhekudis. This modification is not ruled by the decree of Government to replace special assessments on wells by an additional *soil* valuation on account of the "command of water," but is merely introducing into Dholka the mode of assessing the charge for the use of water from Government rivers and streams which was adopted in 1864 after much discussion and experimental settlements. I should not refer, except very briefly, to the subject which has been already so fully thrashed out, were it not that I see considerable difficulty in applying the dhekudiat rules to tálukas now brought under the subsoil water valuation.

I must briefly give the history of the subject.

The bag-rate was applied to Dholka, Viramgám and Dhandhuka, but when Mátar came up for settlement, Captain Prescott introduced (1862) the separate water assessment on all land adjudged to be irrigable by dhekudis, on the ground that the bag-rate was necessarily a fluctuating demand; that it had not succeeded; that instead of encouraging it had a tendency to check the utilization of river-water for irrigation; and that it was a tax on the expenditure of private capital and industry. Mr. Pedder later on (1864), and after more experience in Mahudha, Thásra and Kápadvanj, said of the separate water assessment that wherever practicable it is doubtless the true principle, and when Captain Prescott in Kapadvanj was for special local reasons inclined to apply the old bag rate again, the Commissioner, Mr. Ellis, objected strongly, saying (1865), "I do not approve of this uncertain and fluctuating mode of assessment. It has failed wherever it has been tried. It would be better to place a light extra assessment as on the land under wells."

Incidentally, the question arose as to whether in certain localities a really heavy water-rate, calculated on a maximum of from Rs. 5 to 9 in addition to the dry-crop rate, but only leviable when the water was used, should not be adopted in the place of the light permanent water-rate calculated on a maximum of from Re. 1 to 2, but leviable whether irrigation was used or not. One reason for this proposal was that it was found that villages possessing apparently equal facilities showed great inequalities in the extent of the utilization of river-water. Some already possessed wells and preferred to use them; but the difficulty which prompted the suggestion was one connected with alienated lands. Notwithstanding the difficulties, the suggested exception was not carried out.

Difficulties in carrying out the Dhekudiat assessment.

15. The great liability of disturbance arising from alteration in the course of some rivers was a difficulty which was everywhere encountered. In Dholka the Sábarmati is the principal river, and it presented unusual difficulty. I quote

from a demi-official letter penned by Mr. Pedder in 1864: "The bed of the Sábarmati is very wide, and the course of the stream varies excessively, so that it may flow under one bank one year and the next be half a mile from it. In Chitrásar, for instance, 2 years ago there were 50 dhekudis at work, and the country was covered with the sugarcane and wheat irrigated from them. This year there is not a single dhekudi at work,—a high sand-bank, some hundred yards wide, having been deposited between the stream and the bank where the dhekudis used to be made. This bank may remain for the next ten years, or the stream may revert to its old course next year. At Kaloli, again, a little down the river, there are this year nearly 100 dhekudis at work, and as many have been worked for years past, but, as likely as not, a sand bank may be deposited next rains, and dhekudis may not be worked again for a dozen years to come." Mr. Hadow, Collector of Kaira (1863), said: "The advantage, as regards these lands, of having the water-rate separate is manifest. The site of the dhekudi is generally the bank of a river and as near the edge as possible, and the time it may last or continue to be of use depends in a great measure on the duration of the portion of the bank on which it stands or has been excavated. Portions of these banks, particularly those on the Vatrak, are constantly falling in during the floods, and the course or channel of the river is constantly shifting."

I have made these quotations to introduce the new difficulties which now present themselves.

A small alteration in the course of a river may not only make many dhekudis unworkable, but may afford new facilities for their erection in other places. If then certain areas are now brought under assessment for the facility of dhekudi irrigation, and if others are assessed for subsoil water command, and if the latter gain and the former lose, *during the currency of the lease*, the facility of irrigation from rivers, it seems clear that though the separate water assessment can be struck off and must be struck off the one, a corresponding assessment will not be possible on the other, already assessed for command of subsoil water. Moreover, the valuation of soil for this command cannot be imposed on the land already classed as dhekudiat, where the dhekudis have become useless.

Again, at the expiry of the current lease, though the re-adjustment might be made, it will require the aid of a technical department to re-class for subsoil and for river-water command. The finality of the present classification is one of the chief merits of the subsoil water assessment. It cannot be gained under the proposed system of assessing dhekudiat land.

16. If I am correct in my views as regards the new difficulty, it seems to me that the old bag-rate *must* be retained in Dholka and substituted in similar tracts which may be assessed for the command of subsoil water. I may now say further that even putting aside present difficulty, I am inclined to give my opinion in favour of the bag-rate for dhekudis.

The bag-rate should be retained for dhekudis.

The fluctuating revenue of dhekudis is due to the fluctuating character of this kind of irrigation. The argument against the bag-rate based on the necessity of avoiding taxation of private capital and enterprise is very weak. Dhekudis are very inexpensive. There is very little risk. Even where *khar* appears, a rotation of dry and wet cultivation will prevent its increasing injuriously. I fail to see how the bag-rate can check dhekudi irrigation, as Captain Prescott suggested but did not attempt to prove. The number of dhekudis is comparatively small and cannot be indefinitely increased. The annual inspection required to prevent concealment is infinitesimal, and the interference of low-paid subordinates is easily avoidable, for the Mámlatdár himself may easily personally perform the annual inspection.

I urge that a case has not been made out for the modification suggested regarding dhekudis in Dholka. Even in Mátar, Captain Prescott was not able to abandon the bag-rate altogether, for he was forced to provide this form of assessment to meet the case where land not assessed as dhekudiat should become irrigable from the rivers.

It will be objected that there will be want of uniformity, but there may well be want of uniformity when two such different assessments as a separate *water* assessment and an additional *soil* valuation are concerned.

I may add, though it is not an important question in Dholka, where most of the alienated land is subject to a quit-rent, which includes a commutation of the old "maliat swadeo" cess, that whereas now, if other alienated land is irrigated by dhekudis it pays its share of the bag-rate, such revenue will not be obtainable if the dhekudiat assessment is substituted.

The bag-rate should be raised 25 per cent.

17. I would propose then that the bag-rate be left as regards dhekudis; but as it is just as amenable to an enhancement as the rest of the revenue, that the bag-rates be increased by 25 per cent., which is the increase justified by the rise in prices. Further, in the guarantee given with the new settlement, it will, as usual, be necessary for Government to reserve the right to assess this rate on new dhekudis erected during the term of the settlement.

Extract paragraphs 8, 14 and 15 of the Commissioner N. D.'s letter No. 3191, dated 11th October 1887, submitting remarks on the above correspondence.

8. The effect of the new subsoil water-rate in superseding well taxation is not so apparent in Dholka as it will be in other tálukas where the well assessment was distributed over the land watered therefrom. The result is a trifling addition of 2 annas 10 pies per acre, which will be hardly perceptible.

14. On Mr. Ozanne's proposal that the subsoil water-rate should be added to these lands, Mr. Bulkley now writes :—

"The undersigned remarks that the 'new difficulty' suggested by Mr. Ozanne as probable is based on the fact that, by the rules adopted at the revision survey, *dhekudiat* lands have not been classed as possessing subsoil water advantage. The undersigned is now of opinion that they ought to be so classed, because as a fact they often do possess this advantage, which, being an inherent one, is quite distinct from the external advantage of being able to take water by *dhekudi* from a Government river or stream or lake. By the revision classification rules *rice* land taking or able to take water by lift from a Government tank, and assessed for that advantage, is none the less also classed for subsoil water advantage if it is found to possess it, and has been assessed for it in due course. And, this being so, there seems to be no sufficient reason why *jiráyat* land adjudged to be *dhekudiat* should not also be assessed for the subsoil water advantage which it may chance to possess. If this be done, the said 'new difficulty' as regards dealing with existing *dhekudiat* lands, which by some alteration in the course of a river or stream may subsequently chance to lose their *dhekudiat* advantage, and yet owing to their soil not being already valued for subsoil water command cannot have the subsoil water assessment imposed on them without the aid of a technical department to effect the necessary classification, will disappear. As regards dealing with ordinary dry-crop lands already assessed for subsoil water advantage, which by the same natural causes may gain a new facility of irrigation from a river, there is no other system available than that of re-classing such lands for the river supply according to the regular *dhekudiat* rules. Mr. Ozanne is mistaken in stating that the subsoil water assessment system secures finality of classification. It does so to a great extent, but not altogether; for if the quality of the subsoil water should become deteriorated, or the depth to it become increased owing to an earthquake or other physical causes, some re-classification in the field by a more or less technically qualified agency would be necessary before re-adjustment of the assessment of the land affected could be made. It is then unreasonable to urge the point of non-finality in condemnation of the proposed system of assessing the *dhekudiat* lands of the Dholka Táluka, and to argue that to adopt in its stead a system of levying a bag-rate will altogether or more nearly attain finality. The undersigned is of opinion that to retain the bag-rate system in the face of the fact that notwithstanding the recognized difficulty presented by the liability of the river Sábarmati to change its course, Mr. Pedder, and with him Captain Prescott and Mr. Ellis, deliberately pronounced it inferior to the system of imposing a light permanent water assessment on each acre of land adjudged to be irrigable by *dhekudi* under certain rules and conditions, and adopted the latter, first in villages of the Mátar Táluka and afterwards in villages of the Jetalpur and Daskroi Tálukas, which villages, being on the Sábarmati, are similar in condition to the Dholka villages on that river, would be a course both inconsistent with the principles of all assessments of such lands made in Gujarát since 1862, and in itself inexpedient. There is this further argument against it that, if its retention be adopted (as it seems to be argued it should be) solely or mainly on the ground of the liability of the Sábarmati's course to change, creating difficulty in the re-adjustment of the water assessment of the lands which take its water by *dhekudi*, the question arises, 'Must the

same system be adopted in the case of those lands which have been assessed as irrigable from the Rodh river, and the nála, to neither of which sources of water-supply can the objection apply of liability to alteration in course ?' If not, then the spectacle will be presented of two different systems of assessing *dhekudiat* lands in force in one and the same táluka, in addition to the inconsistency of allowing two different systems to obtain on the two different banks of one and the same river and also in adjoining villages on one and the same bank, although in different tálukas. Mr. Ozanne has not shown that the present system in force in (say) Kasandra of Sánand (which touches Saroda of Dholka) has proved a failure, and until that is shown it is unreasonable to argue that it ought not to be adopted in Saroda. It is necessary to point out that Mr. Ozanne has misunderstood the case when he states that Captain Prescott 'was not able to abandon the bag-rate altogether in Mátar, but was forced to provide' for its being adopted in order to meet the case of lands not originally assessed as *dhekudiat* becoming irrigable from rivers subsequently. Reference to page 575, paragraph 7 of Government Selection (New Series) CXIV, will show that Captain Prescott referred *not* to lands which became irrigable by changes in the course of a river but to dry-crop lands which, not having been assessed at the settlement as *dhekudiat*, because they lay beyond his maximum range of 80 guntha chains from the river bank, might, notwithstanding at some future time or other, be found to take water by *dhekudi* from that river of which, however, the course had *not* altered from what it was at the time of the settlement, and Mr. Ozanne's contention against adopting the modification suggested regarding *dhekudis* is in no degree helped by this argument."

15. I am in favour of this proposal. Owing to low classification of soil the rates on these dhekudiat lands (which probably differ little from those on the other side of the river on which sugarcane is extensively grown) will apparently be little, if at all, in excess of those on land in the interior of the táluka which produces cereals only. By the permanent water-rate also we make a present to the people of a supply which, under section 55, Land Revenue Code, is specially reserved to Government. I am not sure that the facilities for irrigation on this dhekudiat land have been sufficiently highly assessed, but a Rs. 2 rate in Mátar (in substitution for the bag-rate) was supposed to cover loss to Government, and on this basis Rs. 1-8-0 is high enough for Dholka.

Extract paragraph 3 of the Survey and Settlement Commissioner's Memorandum No. 1976, dated 3rd November 1887, submitting remarks on the above correspondence.

3. As the Survey Commissioner served in Gujarát as a Revenue officer for six consecutive years, and for the last six years has continuously watched and directed step by step each measure adopted to bring about this particular revision, it may not be amiss for him to state that the proposals formulated by Mr. Bulkley in his very able report were fully discussed with the Survey Commissioner before they were placed on paper and that they are in full consonance with his views. The only amendment he is prepared to receive is that the "dhekudiat" lands should be classed for subsoil water advantages, as in the case of rice lands, and the resulting annas added to the soil classification, by which step the lands will be placed on the same footing as other dry-crop lands, should they cease to be watered from "dhekudis."

Extract paragraphs 4 to 7 of Government Resolution No. 796, dated 3rd February 1888, passing orders on the foregoing correspondence.

4. Water-assessment under the existing settlement in Dholka is levied by a rate fixed upon the water actually raised and is payable for every water-lift worked under the name of a 'bag-rate.'

In the case of ordinary well irrigation the assessment of water is now superseded by the system of including subsoil water advantages in the appraisement of soils. The application of this system in Dholka required care owing to the tendency to salt in the subsoil water; but great care was used, and Government concur in the conclusion of the late Acting Survey and Settlement Commissioner (Mr. Ozanne), who has examined the question very thoroughly, that the system is particularly well adapted to the settlement of districts, such as Dholka, containing lands in which water is so close to the surface that it can be raised for irrigation

at a very small cost, by means of " kacha," *i.e.* temporary, wells, which are often little more than shallow pits with a temporary lift erected over them.

5. In this class of lands are those known as " Bháta." These are the most recent alluvial lands on the bank of the Sábarmati river, with a soil of exceptional fertility enhanced by water near the surface, and occasionally re-fertilized by exceptionally high inundations. In the original settlement the special character of these lands was not fully realized nor adequately dealt with, but such of them as were considered to be permanent, *i.e.*, not liable to destruction by floods, were, like other irrigable lands, assessed at a dry-crop rate with the addition of the 'bag-rate' on water lifted for irrigation. When similar lands in neighbouring tálukas came to be assessed, the Settlement Officer, Mr. Pedder, advocated for them an assessment based on their exceptional advantages as regards water, the rate known as 'Bágáyat' being laid upon these lands or such of them as might be ascertained to be permanent as to quality of soil, and those lands the area of which was liable to be affected by floods being subject to measurement on any modification of their area. Such 'Bháta' lands as have no permanent character, being in fact river-bed, would be left out of settlement altogether, to be sold annually by auction. A settlement in accordance with these principles was applied to the 'Bhátas' of other tálukas then under process of assessment and was extended to such areas in Dholka as were found to be unoccupied and consequently at the disposal of Government for a modification of assessment in 1863-64. The 'Bágáyat' rate thus imposed upon 'Bháta' lands, in so far as it represented irrigation from 'kacha' wells, corresponded very nearly to an assessment on the principle now adopted of including subsoil water advantage in the items of classification of soil. The rates introduced by Mr. Pedder therefore are rightly adopted as the 'datum' for revision assessment of Dholka 'Bháta' lands by Mr. Bulkley.

6. But there remains another class of irrigational privilege to be dealt with in the Dholka settlement. This is the supply from rivers of water raised by the lifts known as 'Dhekudis.' This resembles 'kacha' well irrigation, in that it involves an insignificant expenditure of capital, but it cannot be assessed by the valuation of subsoil water advantage, as it is a distinct privilege co-existing with that of subsoil water but entirely independent of it. It is proposed to substitute for the 'bag-rate' hitherto paid for water raised by 'Dhekudis' a light 'Bágáyat' rate on all land irrigable from river banks with reasonable facility. These lands were not subjected by Mr. Bulkley to classification for subsoil water as other lands, no doubt in view of their liability to pay for the use of river water. But as they usually rank high in respect of facilities for well irrigation, and as their capacity for irrigation from river water is liable to interruption or modification as pointed out by the late Acting Survey and Settlement Commissioner (Mr. Ozanne), it is right that the permanent advantage of subsoil water-supply should be included in their permanent assessment. To this will be added a light assessment representing the additional privilege of irrigation by 'Dhekudi,' which may be liable to modification if the privilege is withdrawn by natural causes, or may be imposed on lands newly brought under 'Dhekudi irrigation. The 'Dhekudiat' assessment has been carried out in accordance with rules which have stood the test of experience in previous settlements, and their application is well understood; but it is necessary that they should be very clearly formulated and recorded with the Director of Land Records and Agriculture and with the Collectors for guidance in dealing with river-bank lands which may gain or lose the capacity for 'Dhekudiat' irrigation; and it must be clearly borne in mind that after the subsoil water advantages of such lands has been classified and assessed, the 'Dhekudiat' rate should be reduced by the amount of such assessment, as both water privileges cannot be exercised at the same time on the same land. In the case of the Dholka lands upon which the 'Dhekudiat' cess has already been laid, such portion of it as may represent the value of subsoil water privilege should be transferred to the permanent assessment due to soil only.

7. These orders will dispose of the objections raised by the late Acting Survey and Settlement Commissioner (Mr. Ozanne) to the distribution of 'Dhekudiat' assessment upon the land, and will make it possible to adhere throughout the whole of the Dholka Settlement to the principle that irrigational

privileges should be treated for purposes of assessment as incidental to land valuation rather than as separate items of taxation, such taxation acting *pro tanto* as a discouragement of the use of water.

Section IV.

Extract paragraph 8 from the Deputy Superintendent, Gujarát Survey's report No. 130, dated 20th February 1889, on the Revision Survey Settlement of the Daskroi Táluka of the Ahmedabad District.

8. The *dhekudiat* lands were classed for subsoil water advantage as well as for *dhekudi* irrigation in accordance with the principle laid down by Government in paragraph 6 of their Resolution No. 796 of 3rd February 1887. As regards subsoil water classification generally, the Dholka "orders" with their classes were, with some modifications, adopted with the sanction of the Survey and Settlement Commissioner. The actual values assigned to the several classes range from 1 anna 6 pies to 3 pies, and were fixed by the Survey Commissioner after a consideration of the revenue derived from the present water-rates paid by garden lands, and the area of the lands adjudged to possess subsoil water advantages. Their application to the ascertained area regulated by the proposed maximum rates gives an average enhancement of assessment per acre of Re. 0-4-0. The total revenue thus accruing is Rs. 25,128-9-0, which, compared with Rs. 19,421-7-0, the water share of the revenue derived in 1887-88 from well irrigated lands, shows an increase of Rs. 5,707-2-0, or 29½ per cent.

Extract paragraphs 2 to 8 and 11 of the Ahmedabad Collector's letter No. 706, dated 6th March 1889, submitting remarks on the above correspondence.

2. It is not possible to form a very clear idea of the results of the revision upon the cultivators of the different villages, as in making a comparison between existing and proposed rates there are two elements of disturbance about which few details or statistics are given. One of them is the substitution of dry-crop rates on gardens and the other the extinction of well valuation in estimating the assessment or water-rate upon rice fields. For both of these there has been substituted a general subsoil water-rate which is stated to bring out an average per acre of Re 0-4-4. This is more than the difference between the maximum rates of two groups of villages, and 50 per cent. higher than the same rate in Dholka. It yields a revenue of Rs. 25,128, an increase of Rs. 5,707 over the water share of the revenue from well irrigated lands. But what the range of this rate is, or its incidence on jiráyat and rice lands respectively, is not stated. Moreover, owing to the average rates of assessment being only given for entire villages, regardless of the amount of jiráyat or kyári respectively in them, and without showing what allowance is to be made for the reduction of old garden rates, and wells, the extra assessment on which has been made a present to the owners, it is impossible without long calculations to judge how far the incidence of jiráyat or kyári land assessment has increased or decreased in any particular village.

3. The following table gives the general result of the revision so far as Appendix L furnishes it:—

Old.

	Area.	Assessment.	Average Assessment.
	Acres.	Rs.	Rs. a. p.
1. Old dry-crop	77,815	1,63,297	2 1 7
2. „ garden	6,917	35,373	5 2 2
3. „ rice	14,881	86,710	5 13 2
Total ...	99,613	2,85,380	

New.

	Area.	Assessment.	Average Assessment.
	Acres.	Rs.	Rs. a. p.
4. Dry-crop, including old garden—			
Assessed for subsoil water	74,147	2,27,632	3 1 1
Not assessed for subsoil water ...	3,803	9,222	2 6 0
5. New rice—			
Assessed for subsoil water	4,966	18,538	3 11 8
Not assessed for subsoil water ...	72	249	3 7 4
6. Old rice—			
Assessed for subsoil water	14,226	82,353	5 12 7
Not assessed for subsoil water ...	262	1,331	5 1 3
7. Dhekudiat	1,439	4,706	3 4 4
8. Bháta	524	4,179	7 15 7
Total ...	99,439	3,48,220	

This shows that the assessment on old rice is slightly reduced all round. Assuming that the 6,917 acres of garden has all been reduced by the difference between its former assessment Rs. 5-2-2 and the present jiráyat assessment Rs. 3-1-1, *i.e.* by Rs. 2-1-1 an acre, a present of Rs. 14,302-5-5 per annum has been made to the owners of gardens, the amount, and more, having been distributed over the whole jiráyat area, with the exception of a very small portion. New converted rice (though under the plea that Government never taxes improvements, it is assessed far lower than the old rice) pays a rate of Rs. 3-11-8 as against a jiráyat rate of Rs. 3-1-1, and therefore almost the whole burden of the enhancement of 22 per cent. and of the generosity of Government to the holders of valuable old wells and gardens (the assessment on which Colonel Prescott calculated at just twice the jiráyat rate) falls upon the jiráyat.

4. I ask with confidence is this just, is this fair? What would the poorer classes, who cultivate jowári and bájri, think if they knew that the Government required an increase of land-revenue, and while forgiving the owners of gardens their garden cess and the makers of new kyári their water-rate, and keeping the rate stationary on what Mr. Fernandez admits is the most valuable land, threw the whole of the burden on the jiráyat, telling them for their sole consolation that the well kasar will be remitted for the future and that they may convert, jiráyat into kyári if they like, and it will be assessed as kyári, but not at old kyári rates.

5. I should like to point out also that the position is scarcely logical. The theory is that improvements should not be taxed. Government, therefore, presents the garden-owning Paul with his garden rate, charging, however, a dozen Peters next door Re. 0-4-4 an acre extra, perhaps a good deal more, to make up for it. Similarly it is proposed to assess new kyári as jiráyat, plus something extra for natural advantages, on the ground that "the private capital sunk by the enterprising holder of the soil" must not be taxed. Yet it continues to tax old kyári at full rates, both for land and water, though that was also made from private capital, and there is no reason to suppose it is older than many of the old gardens, while it possesses in the majority of cases no special natural advantages in excess of the new kyári.

6. Of course I do not advocate the giving up of the great revenue derived from old kyári—revenue levied according to the custom of the country and not too heavy when compared with the profits of the cultivation. Neither do I wish to raise the question of a subsoil water assessment as against a cess on wells. Wells, besides adding to the value of a crop in good seasons, are the salvation of crops in bad seasons and a direct safeguard against famine. There is every reason, therefore, for encouraging them. But the conversion of jiráyat into kyári has no such merit. The expenditure needed for it is often very small—merely the raising of a small bund. The system of taking a "*small* addition to the dry-crop rate proportionate to the value of the natural advantages it enjoys" when

worked out, gives Rs. 2 an acre less for new kyári than old. I cannot see why the natural advantages, *i. e.* the water and the position of the field, should not be assessed at the same rate for new kyári as for the old. If, in order to prevent its being said that Government will not tax improvements, some allowance be made for capital expended, then such expenditure should be estimated, and an attempt made to allow something for the interest on it proportionate to the share which that interest bears to the value of the whole crop. But in Daskroi at any rate, a very flat táluka, "the increase in the value of the land" of which new kyári is composed, or in "the profits of cultivating the same" (to quote Act IV of 1886), are not, as a rule, due to the improvement. They were inherent in the soil before, and, therefore, if both, old and new, be assessed alike, the anomaly of having fields, with the *same* natural advantages precisely assessed at very different rates will not be perceived, and the Government will be the gainer.

7. Under any circumstances I suppose it may be considered settled that the revenue from the old "kyári" is to be maintained. Why, then, adopt the half-hearted policy of not making it pay its share of the general increase and of putting the whole of the enhancement on the dry crop? "Kyári" is described by Mr. Fernandez to be "valuable rice-producing land", and in Daskroi it is indeed most valuable. Just as an individual or village in the west of the district is called well-to-do according to the amount of cotton produced, so in Daskroi does wealth go hand in hand with, I might almost say depend upon, rice. To take the poor bájri and jowári crops and increase their average assessment by one-third—the maximum increase is of course far larger than that—seems most unfair. The people at any rate know it well enough, and though native-like, they will say but little openly—for the jiráyat could, I have little doubt, easily pay the increase—in every chowra and at every fair, the injustice of the Sirkár will be discussed in letting off the rich Pátidárs of Asláli and Báreja entirely, and taxing the poor Kolis of Chenpur and Ránip.

8. I am not forgetting that if wells had not been left out of consideration the old rice would have shown an increase. But my complaint is that taking it all round, the kyári assessment is not raised at all, while jiráyat is raised considerably. This of itself is to my mind a proof that the distribution of the subsoil water cess has been inequitably made, that it ought to have been much higher where rice and valuable wells are found to exist together, and much lower where wells are scarce and where there is only dry-crop cultivation.

11. As to the relative incidence of the new dry-crop assessment in the different villages, owing to the old garden land having been amalgamated with the dry-crop, it requires calculating in each case; for Mr. Fernandez has given no details as to how much the average jiráyat assessment, pure and simple, works out to, and how much is added for subsoil assessment or even what the average rate on rice is in each village. The first village is Rakhiál, which at present contains the following:—

	Area.	Present Assessment.	Average per Acre.
	Acres.	Rs.	Rs. a. p.
Dry-crop	1,101	3,038	2 12 1
Garden	286	2,039	7 2 0
	1,387	5,077	

and as revised it will stand as follows:—

Dry-crop	1,357	5,047	3 11 6

The result is that the village will pay less for the next 30 years than it has for the past. Yet the average enhancement on the old jiráyat is certainly high, very nearly a rupee an acre more, though the maximum has been only raised 8 annas. The difference, I presume, is due to the subsoil water assessment, I am inclined to think an enhancement of a rupee an acre on jiráyat is high enough, and though I note in some others it is even higher, I have no objection to make

Extract paras. 4 and 10 to 18 of the Survey Commissioner's report No. 755, dated 16th April 1889, submitting remarks on the above correspondence.

4. The knowledge that great labour was expended at the early settlement in making both measurement and classification as accurate as possible, has enabled us to reduce field operations in revision to little more than a test of the original work. The measurement work in 117 villages out of 123 was found capable of confirmation, while in the remaining 6 villages only the work was more or less re-done. Revision operations consisted, for the most part, in the separation of recognized occupancies as required by the rules. The result of the test of the old soil classification was that in 111 villages it was accepted as too good to call for interference, while in 7 villages it was thought necessary to re-classify on the more recently accepted standards. In the remaining 5 villages re-classification, in whole or in part, was rendered inevitable for reasons stated in paragraph 7 of the report. The only general operation carried on throughout was that of subsoil water classification, in which the principles sanctioned by Government for the re-settlement of the Jhálod and Dholka Tálukas were strictly followed. It is a matter of congratulation that in the case of jiráyat the soil classification, and in the case of "kyári" the soil classification as well as that of rain-water and tank assistance has called for no material amendment. In bháta lands re-classification has been necessary owing to the disastrous floods of the Sábarmati river, which not only swept away much of the land so classed, but did general damage by deposit of coarse sand-drift. Dhekudiat lands have been classed for subsoil water advantages in common with all lands possessing such advantages, but in their assessment we have been guided by the orders contained in paragraph 6 of Government Resolution No. 796, dated 3rd February 1888.

10. Taking all circumstances into consideration, I cannot think that the enhancement of Rs. 62,842, or 22 per cent., which Mr. Fernandez with the advice of Mr. Bulkley proposes for this táluka, with a further addition of Rs. 3,994, raising the total to Rs. 66,836, or by 23½ per cent., which I am about to propose, is likely to be seriously objected to. It is more likely that not fully understanding the complications attendant on the altered principles of taxation of subsoil water, the critic of this settlement may be induced to consider the proposed enhancement as too moderate and to favour the conclusion come to by Mr. James, the Collector of Ahmedabad, that the táluka should be made to bear the utmost burden of enhancement which the limits prescribed by Government will allow.

11. Before coming to the question of the pitch of the revised rates I think it right to notice briefly the objections taken by the Acting Collector, Mr. James, to certain points in the revision scheme for this táluka which really form part and parcel of our revision policy in Gujarát. I might fairly take my stand entirely on the revision papers for the Dholka Táluka, in which precisely similar proposals made by the late Deputy Superintendent, Mr. Bulkley, were, after approval expressed by the Collector, Mr. Reid and the Commissioner, N. D., finally sanctioned by Government in 1888. But as I had no opportunity of expressing my own views on that settlement, and as Mr. James's present doubts and objections are of a kind which, if unreplied to, may be expected to be urged by critics in the future, I am glad of the opportunity to show that not only is our position perfectly fair, just and logical, but that with the minimum risk of error we are introducing a system which will stimulate the most valuable form of agricultural improvement and at the same time relieve the revenue administration of an intricate system of well taxation which has long been a fruitful source of confusion and controversy in Gujarát.

12. From paragraph 2 of Mr. James's report it would appear that he has been led into error by not understanding at the outset how the assessment of subsoil water advantages has been arrived at. Because the average addition to the assessment of lands possessing facilities for irrigation from subsoil water in the Dholka Táluka was 2 annas 10 pies and in the Daskroi Táluka the average incidence is 4 annas 4 pies, Mr. James has evidently jumped at the conclusion that the valuation of subsoil water in Daskroi as an element of productiveness has been higher than in Dholka. But on the contrary it has been lower: so low indeed that any further lowering would be unreasonable. The addition to

the soil valuation which is made on account of subsoil water advantages is made in the form of classification annas which are converted into a cash addition when applied to the maximum rates. The whole system has been clearly explained and approved by Government in their Resolution No. 6342, dated 6th August 1885, Appended to the rules therein sanctioned was a relative valuation scale which was intended to be a guide in future settlement proposals. The actual values of the several classes of subsoil water are arranged by the Settlement officers according to the prevailing orders of water whether sweet or brackish or salt and the relative depths of water coming under each order. Appendices A and B to this report give the actual values applied to Dholka and Daskroi respectively, and will show that the best and most readily utilizable advantages in Dholka have been classed at 2 annas, while in Daskroi the equivalent advantages bear a classification valuation of 1 anna 6 pies only. To make my meaning clear, 1st class soil in Dholka carrying a maximum rate of Rs. 2 would bear an addition of 4 annas if possessed of 1st class subsoil water advantages, whereas similar soil if rated on a maximum of Rs. 2 in Daskroi and possessed of the same subsoil water advantages would take an additional assessment of 3 annas only. The only reason why the average addition for subsoil water in Daskroi exceeds that of Dholka, is that the maximum rates for the former are much higher than for the latter, the maxima in Dholka being from Rs. 2-8-0 downwards, while in Daskroi the rates are graduated from a maximum of Rs. 4-4-0.

13. It is important in considering the incidence of the subsoil water classification in Daskroi to bear in mind that the great advantage of utilizable subsoil water of all degrees of excellence and at all depths believed to be fairly workable is contained within the limited compass of 1 anna 6 pies, or $\frac{3}{4}$th of a class in the ordinary classification scale, and that the anna-valuation descends from 1 anna 6 pies down to 3 pies, which represents the lowest assessable advantage. The presence in the soil of a field of a little extra sand or a few nodules of lime would be held by our classing rules to reduce the classification valuation of that field by one class or 2 annas, so that when the presence of the treasure of sweet water within 15 to 20 feet of the surface with every facility for digging a well is met by an increase of classification of less than 2 annas, we may fairly claim to have fulfilled our promise and to have got rid of special taxation of well irrigation by a small addition to the classification of all soils which possess the required subsoil water facilities.

14. The clearing up, once for all, of this point will, I think, throw light on many of Mr. James's doubts and objections. His constant reference to the whole burden of the relief given to the owners of wells "being thrown on the jiráyat (paragraph 4) and to the "letting off of the rich Pátidárs entirely and taxing the poor Kolis" (paragraph 7) makes me think that he has not appreciated the fact that the addition of assessment on account of subsoil water has been made on every acre of land with whatsoever crop growing on it which has water of a certain quality reachable at a certain distance from the surface. It is no matter whether it is "bájri" or "jowári" land belonging to a poor Koli or cotton and wheat land belonging to a rich Pátidár, nor does it signify in the least degree whether it is rice land bearing "kamod" rice or garden land bearing sugarcane or the best orchard produce. A strange misapprehension on this head pervades the first eight paragraphs of Mr. James's report—*vide* paragraph 8 for instance. Because old "kyári" land is not raised at all (a very probable circumstance considering that well "himayát" has been removed from its assessment) and because jiráyat is raised considerably, it is considered proved that the distribution of the subsoil water cess has been inequitably made. But when it is known that the classification of each plot of land for its subsoil water facilities has been made in the field on its own merits and under rules sanctioned by Government, and that it forms an integral part of the soil classification, the idea of inequality of distribution falls to the ground. Lands are assessed for their advantages of subsoil irrigation independently of the fact whether they are or are not utilized at present; and to assess the facility higher where the people in the neighbourhood have largely used it, and lower where it has been allowed to lie dormant, as recommended by Mr. James in his 8th paragraph, is contrary to the principle upon which we have proceeded from the first, *viz.*, that the possession of the facility is the advantage to be taxed and not its utilization. Again, if bájri and jowari

land bears its share of the abandoned well rates, it does so in proportion to its general productiveness, and if such land belongs to a poor Koli its productiveness is likely to be so small compared with that of the low-lying deep soils of the rich Pátidár that, if it is assessed at all for subsoil water, the average addition to its assessment is far more likely to be 1 anna 4 pies than 4 annas 4 pies.

15. It will be advisable perhaps, to avoid further misapprehension, to state clearly how garden and rice lands have been dealt with in revising this settlement. Garden lands watered from wells have of course had all assessment due to taxation of wells struck off and a subsoil water rate substituted. Although undoubtedly owners of wells benefit greatly by this arrangement and have a present made to them of the difference between their existing garden rate and the resulting assessment from the new subsoil water classification, the deliberate intention of Government that this should be the case is at the root of the whole change of system. When we became bound by law to exempt from assessment new wells constructed with the labour and capital of the occupant of the land, we continued as a matter of course to tax with the usual forms of taxation those wells which had been constructed before the improvement policy of Government had been declared. This produced loud complaints in the press and elsewhere, that while recent well construction received immunity from taxation, the "pioneers of the well industry," who had constructed wells before the survey settlement in the face of many difficulties and discouragements, continued to be heavily taxed. It was in reply to this complaint, which was felt to have some weight, that Government revived a scheme, which had found favour as far back as the time of Sir Barrow Ellis and had been more recently advocated by Mr. G. F. Sheppard, by which "the garden-owning Paul," as Mr. James calls the well owner, might be relieved of the overwhelming tax imposed upon him in return for his enterprise in bringing the water to the surface, while the immediate loss to Government might be recouped by attaching a small assessment not only to the jiráyat lands of the neighbouring "Peters" who possess the natural advantage of subsoil water without utilizing it, but by assessing also the natural advantage of the lands of "the Pauls" themselves. Wells in Gujarát are by no means permanent; if they do not fall in altogether in the course of a generation they usually require extensive repairs; and if the well from which a garden is irrigated falls to ruin, the land will simply go back to its dry crop position with its natural subsoil advantages recognized, but lying dormant until they are again utilized.

16. The same principles govern "kyari" land whether old or new. If old "kyari" has well assistance, the classification annas representing that assistance are taken off, and a classification representing the value of the subsoil water advantage is substituted. New "kyári" is classed as dry-crop only with two or three classes added, as the case may be, in the shape of "goons" for advantages of position and facility of conversion. If declared to have assessable subsoil water facilities, the classification thereof will be added to the dry-crop-soil classification, but not an anna more will be levied from the occupant if he were to supplement the irrigational advantages of the land by a dozen wells.

17. While distinctly advocating the retention of the present system under which old "kyári" lands are fully assessed to the revenue, Mr. James is of opinion that we follow a half-hearted policy in not fully assessing new "kyári" also, which has been turned into rice by utilizing the same natural advantages of position and at an expenditure which he characterizes as small. In fact, Mr. James's recommendation amounts to the ignoring altogether of the conversion of dry-crop land into rice as an improvement coming under the protection of the law, although Government from the earliest days have admitted it to be so and have dealt delicately with it in consequence. In the Deccan and Southern Marátha Country revision surveys, the assessment of new rice has been brought within the rating of the best dry-crop land, thus letting the occupant realize full profits from his enterprise in utilizing the natural facilities of the land by throwing up embankments to impound the rainfall and by deepening the rice beds to augment the supply of standing water, which are operations of a more or less expensive nature attending the conversion of land into rice in all parts of the Presidency. In more recent settlements in the Konkan an attempt has been made to assess with some greater degree of accuracy the value of the natural

advantages inherent in the soil which have rendered its conversion into rice possible and profitable, but in those settlements also the necessity of specially rewarding enterprise and tempting the agriculturists to further improvements of the kind has ended in Government leaving the cultivator of newly made rice in possession of an overwhelming share of the profits of the cultivation. In Gujarát more than in any part of the Presidency we have recognized in our rules the possibility of gauging the natural advantages which have facilitated the conversion of the land into rice, but yet the average assessment of new rice in this settlement is less than the average assessment of old rice by more than Rs. 2 per acre. Any endeavour to make a nice calculation of the capital actually expended in the conversion of the land so as to allow something for the interest on it proportionate to the share that interest bears to the value of the whole crop, would be unsuccessful and useless. To make an estimate of the kind for each new rice bed or each addition to an old rice bed would involve intricate enquiries which we are not in a position to undertake. In the absence of detailed and trust, worthy accounts supplied by the improvers themselves and without any means of judging how great was the expenditure on each of the different operations, some of which may have been gradually carried out by the persevering labour of the occupant, the only safe plan is to adopt a standard of rating which will allow a wide margin for all contingencies and thereby leave but little chance of the labour and capital of the occupant being subjected to taxation.

18. I understand Mr. James to be opposed to any reduction of the assessment on old "kyári" lands which forms so large a part of the Government revenue in the Daskroi Táluka; but he has raised a question as to why, if garden lands are excused their well taxation on the ground of the improvement which has made their conversion into garden possible, old "kyári" lands should be assessed at rates higher than the ordinary dry-crop, seeing that their rice-producing capabilities have been also the result of the expenditure of labour and capital. The answer is very simple. Neither in the case of wells constructed previous to the survey, nor of rice lands existing at that time, is Government either by law or declaration of policy called upon to abate any portion of the revenue they have been in the habit of enjoying. In the case of lands irrigated by wells, Government have thought it expedient to abandon the special revenue, having found a most just and felicitous means of recouping the loss; but in the case of old rice lands, Government have not chosen to decree the abandonment of the very substantial revenue from the higher form of cultivation for which there in no possible substitute. There is another reason why the remission of old "kyári" assessment would be a wanton abandonment of revenue. The majority of the old rice lands of the Ahmedabad district have to all appearances existed from byegone days, and since the improvement was made may have changed hands over and over again in the periods of famine, war and pestilence which have passed over the district. In nine cases out of ten it would be impossible to prove that the old "kyári" was not laid out for rice some centuries ago whereas in the case of well-watered lands the well must have been more or less a recent improvement, and in nine cases out of ten it would be safe to assume that the present occupant is the descendant or representative of the builder thereof, and that the benefit of the remission does not go far astray.

Extract paragraphs 2 and 4 of the Commissioner N. D.'s endorsement No. 1254, dated 27th April 1889, forwarding to Government correspondence relating to the Revision Settlement of the Daskroi Táluka.

2. These proposals are rendered somewhat complicated by the corrections to the original classification, and by the addition of the subsoil water-rate in lieu of well taxation. The Survey Commissioner has been at much pains to explain these disturbing elements, and I quite agree with him in most of his remarks.

4. The amount added for subsoil water is probably no more than would have resulted from a revision of the old rates, and this is *a permanent settlement* of the water assessment.

Extract paragraphs 4 to 7 of Government Resolution No. 4475, dated 22nd June 1889, passing orders on the above correspondence.

4. This is the first táluka the revision settlement of which brings into prominence the effects of the policy of Government in respect of assessment of irrigational facilities. The principle of that policy is that the inherent natural facility for irrigation should be taxed and *not* the artificial application and development of that facility. The reasons for the policy have been most fully elucidated and it is not necessary to explain them further. Such being the principle upon which Government for good reasons have decided to act in revision settlements, the results must be accepted. The features in the present case which appear to the Collector to be anomalous or paradoxical are all, or nearly all, to be attributed to the operation of the rule now adopted.

5. Mr. James has with much patience and acumen analysed, so far as the data before him permitted, the incidence of the proposed settlement. In some minor particulars his criticism is directed to the operations of appraisement by the survey, but to make such criticism valuable, a far more searching examination of the highly technical and detailed results of these operations than was within the Collector's reach would be necessary. It would be simply impossible for a Settlement officer to include in his report, or even to show in appendices, the processes by which appraisement results are in every group of cases arrived at, or the causes of differentiation. His Excellency the Governor in Council must rely, and feels that he can confidently rely, upon the experience and industry of the Survey and Settlement Commissioner, that the minute care essential to accuracy of method has been bestowed upon the preliminary processes in the survey and settlement of this as of other districts. The criticism of the Collector has this value that it supplies a motive for the most rigid scrutiny and requires the departmental officers to be able to say as the Commissioner in his paragraph 26 states :—"I can engage to give him chapter and verse for any discrepancy which may appear at first sight serious."

6. But in its general scope Mr. James's criticism is directed against the results of the rule exempting "improvements" from taxation, and the method of its application. It is of course the case that under the proposed settlement the assessment on wells has been removed, but it is not correct to say that this taxation has been transferred to any other class for the benefit of the well-owners. Mr. James hardly appears to realize that under the present rules it is theoretically a matter of indifference to the assessing officer what use is made of the land. The facility for irrigation from wells given by subsoil water and the facility for impounding rain water given by levels and other natural characteristics are matters to be taken into consideration on appraisement of soil. In the Konkan it has been found possible to bring this latter feature into account as affording prospect of easy conversion of dry crop into rice land. In Gujarát this would probably be far less easy but the assessment of rice water in the old settlements and the classification of new rice land as first class jiráyat in the new settlement are based upon the rental value of such natural facilities. This is indeed clearly recognized by Mr. James in his paragraph 6, but he has not given the value it deserves to the consideration of the public interest in encouraging the development of these natural advantages and the check which such development would undoubtedly receive were Government to demand from rayats, who by their industry have created new production, the same assessment as from those who have succeeded to the fruits of the industry of remote generations.

7. That the assessment of some of the rice lands is lowered is due entirely and solely to the substitution of subsoil water advantages for the assessment on wells which has also led to the reduction of assessment in garden lands. If it is clearly remembered that practically all land has now to be treated as "dry crop" with varying advantages as regards subsoil or rainfall water, many of Mr. James's difficulties which at first sight appear to be well founded will disappear.

No. 4691 of 1889.

REVENUE DEPARTMENT.

Bombay Castle, 2nd July 1889.

To

THE DEPUTY SUPERINTENDENT,
Gujarát Revenue Survey.

SIR,

With reference to your letter No. 130, dated 20th February 1889, submitting proposals for the revision of the Survey Settlement of the Daskroi Táluka of the Ahmedabad District, I am directed to draw your attention to the fact that the best subsoil water advantages in Dholka have been classed at 2 annas, while in Daskroi the equivalent advantages bear a classification valuation of 1 anna 6 pies only; and to state that the reasons for this difference of treatment are not understood by Government. If the explanation is, as would appear to be the case, that the adopted scale is calculated to just recover existing well taxation *plus* the probable increase on revision if such well taxation were retained, it would appear to rest on an erroneous basis, for well taxation having been abandoned on the ground of its being wrong in principle, the real question that arises is—What is the additional value given to land by the existence of subsoil water advantages? " His Excellency the Governor in Council sees no reason why such additional value should be estimated in classification at a maximum of 2 annas in Dholka but only 1 anna 6 pies in Daskroi, and I am accordingly directed to request that you will be good enough to submit a full explanation on the subject through the Survey and Settlement Commissioner.

I have, &c.,

J. DE C. ATKINS,
Acting Under Secretary to Government.

[Through the Survey and Settlement Commissioner.]

No. 573 of 1889.

From

T. R. FERNANDEZ, ESQUIRE,
Deputy Superintendent, Gujarát Revenue Survey;

To

THE UNDER SECRETARY TO GOVERNMENT,
Revenue Department.

Deputy Superintendent's Office,
Surat, 30th July 1889.

SIR,

Referring to your letter No. 4691 of 2nd instant, enquiring as to the principle on which the best subsoil water advantages of Dholka have been classed at 2 annas and those of Daskroi at 1½ annas, I have the honour to refer you to Government Resolution No. 6015 of 25th July 1884, on the subject of the assessment of the Jhálod Táluka of the Panch Mahals, from which it will be perceived that the principle was affirmed by Government so far back as in their Resolution dated 8th June 1866, and that its application to the Jhálod Táluka, that is, the very first occasion on which it became necessary to employ it in Gujarát, was confirmed 18 years after. Since then the application of the principle has been confirmed in the cases of tálukás Dholka, Dhandhuka and Daskroi, all of Ahmedabad.

2. The following will explain why the maximum for the Dholka subsoil water advantages was fixed at 2 annas and that for Daskroi at 1½ annas. The object having been to recover the existing well taxation which Government were going to abandon, (1) the amount of the well taxation, (2) the extent of the

land possessing subsoil water advantages of the various orders according to the scale fixed, (3) the maximum soil rates of the táluka,–all these formed motives for guiding in the determination of the subsoil water rate. In Daskroi the water revenue to be abandoned was Rs. 19,421, and in Dholka Rs. 6,000, while the maximum soil rates were from Rs. $4\frac{1}{4}$ to Rs. 3 and Rs. $2\frac{1}{2}$ to Rs. $1\frac{1}{8}$, and the area possessing subsoil water advantages of the different orders 93,341 acres and 45,861 acres, respectively. It will be seen therefore that the bare statement of the fact that the Dholka subsoil water rate is 2 annas and the Daskroi $1\frac{1}{2}$ annas does not prove that the pressure of the former is greater than that of the latter, for here the very converse is the fact, the multiples in the one instance (Daskroi) being nearly twice as great as in the other (Dholka).

3. You state that "well taxation having been abandoned on the ground of its being wrong in principle, the real question that arises is—What is the additional value given to land by the existence of subsoil water advantages?" This in the abstract seems undeniable, but I would very respectfully state that in practice it would be found unworkable. Take, for instance, Daskroi as a typical táluka. It has more than 67,000 numbers and subordinate numbers, and only 4,563 wells; and the condition of the majority of the cultivators, both owing to indebtedness and natural incapacity, is such as to render all hopes of the number of wells ever approaching to, much less equalling, the number of survey numbers illusive. It is evident from this statement that only a very light subsoil water rate can succeed in meeting the case. That our present system of assessing subsoil water does result in such a light rate is patent;—will the principle enunciated by you also yield light rates? The following calculations will, I venture to think, show that it will not.

4. I will take the case of a well that is the most favourably circumstanced, *i. e.*, that its depth to water is only some 12 feet, that its water is sweet and abundant and remains so throughout the year, and that the soil surrounding it is first class capable of producing sugarcane, the most paying of crops, every third or fourth year. This well is quite capable of irrigating 3 acres (a moderate area) of sugarcane. Say that it is built with *kandels* or earthen baked annular rings, that it cost Rs. 150, and that it is capable of lasting 15 years, an average period. The credit and debit sides of the account of the year in which sugarcane is grown would then be as follows:—

		Rs.	a.	p.
Credit—				
Gross produce (medium value)		1,500	0	0
Debit—				
Cost of cultivation at Rs. 200 per acre	600			
Government rent at Rs. 5 per acre.	15			
Share of the cost of the well for one year	10			
Interest on Rs. 150 at 6 per cent.	9			
		634	0	0
Total net profit ...		866	0	0
Deduct—				
Profit for the year if the field had been cultivated with jowári or bájri.		100		
Profit due to the well ...		766	0	0

This figure divided by 3 years gives a profit, say, of Rs. 250 per annum, or, in other words, the value given to the land by the existence of subsoil water would be represented by Rs. 10 (the interest on the profit at 4 per cent.) equal to Rs. $3\frac{1}{3}$ per acre. (I have altogether omitted from consideration the profit resulting from the use of the well during the interval between the sugarcane crops.) This sum of Rs. $3\frac{1}{3}$ would be far too high to levy in addition to soil rate from all lands possessing the same advantages as the field whose case has been considered, irrespective of the fact that they have wells or no, or that the class of cultivators who hold them are or will ever be in a position to lay out the necessary capital to build wells where now none exist.

5. From the foregoing, it will be evident that the perfect principle stated by you can only work to the advantage of both the land-lord and the peasant in a community every member of which is in a position to avail himself of the advantages offered by the new subsoil water assessment policy of Government. So long as the capabilities of our cultivators descend to so low a scale as those of the Bhils and the inferior classes of Kolis, so long I venture to think the imperfect system we are now following with the sanction of Government will best answer all requirements of the case; it will, without entailing on Government the necessity of making a sacrifice, afford a strong inducement to the agriculturist to build wells and increase the general wealth of the community.

I have, &c.,

T. R. FERNANDEZ,
Deputy Superintendent, Revenue Survey,
Gujarát

No. 1554 of 1889.

Poona, July 1889.

Forwarded.

2. With reference to the query: Why the best subsoil water advantages in Dholka have been classed at 2 annas, while in Daskroi the equivalent advantages bear a classification valuation of 1 anna 6 pies only, the undersigned would beg to call attention to paragraphs 4 and 11 of the Survey Commissioner's letter No. 910, dated 3rd May 1884, on the Jhálod Táluka revision settlement and paragraphs 12 and 13 of letter No. 755, dated 16th April 1889, on the Daskroi Táluka revision settlement, in which, not only a full explanation as to the mode adopted in fixing the valuation of the subsoil water advantages is given, but the bases on which such decisions are arrived at are clearly explained, and in addition reasons are given for what appears an anomaly in comparing the valuation of subsoil water of Daskroi with that of Dholka. Further, in his demi-official letter of May last, to the Private Secretary, Mr. Stewart states with regard to Daskroi that it was found that "if the scale ranged from 1 anna 6 pies for the highest advantage to 3 pies for the lowest we shall just recover the existing well taxation *plus* the probable increase on revision if such well taxation were retained; and consequently I ordered that scale to be adopted. It has been a principle from the beginning that Government has no desire to get additional revenue by the change in system. All that is contemplated is that it should not lose existing revenue." From the above it will be seen clearly how the subsoil water advantages have been assessed heretofore and why the same advantages in Dholka were assessed at 2 annas and in Daskroi 1½ annas only.

3. With regard to the second question, *i e.*, What is the additional value given to land by the existence of subsoil water advantages, Mr. Fernandez has made out that it will amount to about Rs. 3⅓ per acre. The undersigned is not prepared to endorse his views on this subject in full and as this "real question" as it is stated to be, has not heretofore been considered with a view to regulating the scale of increase due to advantages for subsoil water, it would appear advisable, if such is the intention of Government, to enquire more fully into what additional value is actually given to land under various circumstances owing to the existence of subsoil water advantages.

C. W. GODFREY, Colonel.
Acting Survey Commissioner.

No. 6121 of 1889.

REVENUE DEPARTMENT.

Bombay Castle, 31st August 1889.

To

THE SURVEY AND SETTLEMENT COMMISSIONER.

SIR,

With reference to your memorandum No. 1554, dated 29th ultimo, submitting the explanation called for in Government letter No. 4691, dated the 2nd idem,

as to the principle on which the best subsoil water advantages in the Dholka Táluka of the Ahmedabad District have been classed at 2 annas and those in the Dáskroi Táluka of the same district at 1 anna 6 pies only, I am directed to observe that the point raised in the Government letter referred to was simply this, Why does the occupant in one táluka pay an additional 2 annas for subsoil water advatages and the occupant in the other táluka an additional 1½ annas for those advantages which are similar ? The answer given is, because Government have to recoup themselves for loss of existing well assessment in the former táluka on a larger scale than in the latter táluka, or because the area of the former táluka is larger than that of the latter. His Excellency the Governor in Council is of opinion that the considration of Government revenue from well-*assessment* in classifyng the water advantages introduces a disturbing and misleading factor which should be eliminated. The process of classification is not to be repeated, nor therefore is this process of classifying subsoil water advantages which forms part of it to be repeated. It is, therefore, important that the assessment should be paid on the permanent basis of "the inherent quality of the field as a productive agent." Paragraph 25 *etseq* of Government Resolution No 6015, dated 25th July 1884, defines exactly what is intended, and the last sentence of paragraph 29 of that Resolution shows what is intended.

The Resolution quoted seems to Government not to admit of the application of the principle of "the circumstances of each táluka being dealt with separately" as recommended by the Survey and Settlement Commissioner in his letter No. 910, dated 3rd May 1884.

3. It is possible to take the condition of the people, &c., into account in laying down maximum rates, but in the process of classification it is essential to follow one universal rule, because if this is not done it is obvious that at the next revision it will be necessary to re-open the classification process on account of the alteration of the circumstances of a táluka, the increased number of wells and the improved condition of the people.

4. The error, I am to observe, lies in a confusion of classification and assessment and in losing sight of the fact that subsoil water advantages are classed and assessed.

5. As the matter is of very great importance, I am directed to request that you will be good enough to consult Mr. Stewart about it and report the result of your consultation to Government.

I have, &c.,
J. DE C. ATKINS,
Acting Under Secretary to Government.

No. 118 OF 1890.*

FROM

COLONEL C. W. GODFREY,
Acting Survey and Settlement Commissioner;

To

THE CHIEF SECRETARY TO GOVERNMENT,
Revenue Department.

Survey Commissioner's Office,
Poona, 15th January 1890.

SIR,

With reference to correspondence ending with the Under Secretary to Government Revenue Department's letter No. 4691, dated 2nd July 1889, I have the honour to submit a full explanation and report on the subject of subsoil water advantages, the system now in force in Gujarát, and what I propose for adoption in future.

2. Before proceeding to deal with the several questions referred to in the Under Secretary's letter above quoted, I think it desirable to give a short account of the manner in which the so-called subsoil classification system has come to be introduced into the districts of Gujarát and has become a part of the system of land classification thereof.

Custom prevalent prior to the survey, *i.e.*, under old administration.

3. It must be in the first place explained that by immemorial custom "subsoil water advantage" or "the power of affording water for irrigation" has been looked upon as one of the most valuable intrinsic capabilities of land and is always taken into consideration in fixing the rent charge payable to the State on such land. That this capability was taken into consideration in fixing the rent charge under the Native administration is clear from the fact that under that administration irrigated lands paid a higher rent-charge than dry-crop or non-irrigated lands. Lands with wells in them were assessed at higher rates than lands without wells. The taxation of well lands, *i. e.*, the imposition of an extra rate upon well garden lands, formed part of the old Marátha system of assessment and did not originate with the Deccan Survey Settlement. "Under the Native rule," writes Colonel Anderson, "wells were never allowed to be sunk without some addition to assessment, though in proportion to the expense incurred in sinking the well it was * * * * the custom * * * * to grant a whole or partial remission of extra assessment for a fixed period." Thus under the Native administration the "command of water" was always considered a natural advantage justifying a higher assessment on lands which possessed it than on lands which did not possess the same, although this advantage was not taxed until the well had actually been sunk and the water made use of.

Paragraph 41 of Colonel Francis' report on the introduction of revision settlement into the Indápur Táluka.

Paragraph 3 of Colonel Anderson's letter No. 1202, dated 12th November 1880.

System adopted at the survey.

4. At the survey settlements which were introduced shortly after the country came under the British rule the old plan of taxing wells was continued with certain modifications. On all lands possessing wells an extra tax called "Bágáyat* Tax" in the Deccan and "Bágáyat † Kasar" in Gujarát was imposed. In imposing extra assessment on well lands the survey assessed as irrigated the lands then actually under irrigation, *i.e.*, it taxed the *use* of the water rather than the capability of the subsoil water itself, and left those lands which were in possession of that capability, but which did not utilize it, exempt from the extra taxation. This plan was then sanctioned by Government.

* Paragraph 23 of Lieutenant Nash's report on Indápur original settlement.

† Colonel Prescott's report of 1865, paragraph 3, clause 7, referred to in Government Resolution No. 1449, dated 6th April 1865.

5. Shortly afterwards (but not before the operations of the survey had considerably advanced), that is, about the year 1865, the policy of Government as to assuring to occupants the value of improvements effected by the employment of their capital and labour, took a different course, and that policy received legislative confirmation in Section 30 of the Bombay Act I of 1865. The section ran as follows:—

> "It shall be lawful for the Governor in Council to direct at any time a revision of assessment. Such revised assessment shall be fixed not with reference to improvements made by the owners or occupants from private capital and resources during the currency of any settlement under this Act but with reference to general considerations, &c."

6. The plan of imposing extra tax on well lands adopted at the original survey was considered objectionable as it tended to tax improvements effected by occupants from private capital, and as it was thus in opposition to the liberal policy of Government above referred to, and many experienced Revenue officers urged the desirability of changing that plan. Captain Prescott, then Superintendent of the Gujarát Survey, wrote on the subject as follows:—

"4. I think it must be admitted that the taxation of wells not constructed by the State is a deviation from the broad principles of the Bombay survey. All wells built hereafter by individuals will be free from taxation: it seems hard that wells similarly built by individuals, but before the advent of the survey should be placed at a disadvantage and subjected to heavier taxation for no reason save that their owners were in advance of their neighbours in employing their capital in agriculture.

Captain Prescott's letter of 1865, quoted in Government Resolution No. 1449 of 6th April 1865.

"5. On the other hand, it is quite consistent with the principles of the survey that if the inherent qualities of the soil be such that water is produced by digging for it within a few feet from the furface, this capability should be taxed as well as other elements of fertility."

7. On the same subject Sir Barrow Ellis, the then Revenue Commissioner, N. D., expressed his opinion in the following words:—

"I have the honour to submit for the consideration of Government the propriety of abandoning in future settlements in Gujarát * * * all assessment upon wells. The loss of revenue to Government I propose to make up by taxing the water-producing capability of soils, or, in other words, by slightly enhancing the valuation of land in which water is obtainable close to the surface."

Commissioner N. D.'s letter No. 1045 of 30th March 1865.

8. The subject was thoroughly discussed by the Collectors and the Superintendents of Survey and practical difficulties were suggested in certain localities. The conclusions of the Government (of which Sir Barrow Ellis had become a Member) were set forth in the following Resolution No. 2110, dated 8th June 1866:—

"The question submitted by the late Revenue Commissioner, N. D., was whether a system might not be adopted for assessing by a light rate the water-producing qualities of the soil in preference to the present system of assessing highly only such lands as are found to be already supplied with wells.

"2. The authority of Major Wingate is quoted in support of the present system (that of imposing extra tax on well lands). But that able Revenue officer admitted the correctness of the principle advocated in the letter from the late Revenue Commissioner, N D., * * * * * and it seems that he was deterred from adopting the system, which he deemed to be better theoretically, by the consideration that it would involve a large sacrifice of revenue and that the continuance of the system which he found in existence would not be felt as a hardship if the assessment were properly adjusted.

"3. In the discussion which has taken place there appears to have been some misapprehension, and questions not altogether relevant have been raised; the result however appears to be that the correctness of the theory is admitted, but difficulties are raised in respect to the practical application of the principle.

"4. These difficulties do not everywhere exist. As an instance it may be noted that Major Francis has introduced a similar system into the District of Kandiáro in Sind. In the Bhata lands of Gujarát the principle has also been successfully adopted by Captain Prescott and Mr. Pedder. The plan is certainly practicable where the lands in which wells may be dug are in tracts of considerable extent. Where the well assessment is likely to disappear altogether in a short time, as in some of the districts of Gujarát, or where it is likely to fall off owing to the small profits of such cultivation as compared with dry-crop cultivation, it is surely better to devise and adopt some system for taxing the irrigable quality of the land. This need not be by the general imposition of additional assessment on all lands; it would naturally fall only on the best lands which are ordinarily those in which such capabilities are found. It may in some places be necessary to have the portion of the village lands to which such extra assessment would be applicable noted and recorded by the Assistant in charge of classing duties, and His Excellency in Council does not think that the task would ordinarily be as difficult as the work of fixing again rates for garden lands under the present system. On the other hand, there are doubtless districts in which it would be difficult to carry out the taxation of water-producing powers of the land sufficiently to compensate for the abandonment of the present system. But these exceptions should not prevent the adoption of a more correct system wherever it is practicable.

"5. Captain Prescott has framed a plan for working out an application of this principle. He may be permitted to try this in any district in which it may be found appropriate, and the result will appear in the Settlement Report. It will be sufficient for Government to record an opinion that the principle should be the basis of settlement whenever the Superintendent can safely and conveniently apply it. There can be no greater inducement to the digging of wells than the exemption of all wells from assessment. Of course this exemption could not affect retrospectively assessments now being levied, but *whenever a revision takes place* the Survey Commissioner and Superintendents should consider whether

the special rates imposed on existing wells may not be got rid of without a great sacrifice of revenue."

9. Thus by this Resolution a new system, that of assessing by a light rate the water-producing qualities of the soil instead of assessing highly only such lands as are found to be already supplied with wells, was first recommended and was left for introduction or at least for experiment "whenever a revision takes place."

10. Shortly after the passing of the above Resolution revisions began in the Deccan and that of Indápur was the first. In submitting his proposals for the revision of the táluka (Indápur) the Survey Commissioner wrote with reference to the taxation of well lands as follows :—

No. 147, dated 12th February 1867, paragraph 178.

"The course adopted by me is to put the first class jiráyat (dry-crop) rate upon all lands capable of being irrigated from existing wells, irrespective of the value assigned to it by the jiráyat rate; no addition has been made in consideration of its being irrigated by a well. Government wish a general addition to be made to the jiráyat rates of all lands possessing a water-bearing stratum, but it is almost impossible I think to work out this plan in the ever varying soil of the Deccan. I have therefore taken existing wells as the guide and considered only the land under them as having a water stratum."

11. In their Resolution on the Indápur revision settlement Government passed the following order with reference to Colonel Francis' proposal regarding taxation of well lands :—

No. 1211, dated 27th March 1868.

"In regard to special taxation of wells, it is said with truth that water is like mineral wealth fairly taxable by the landlord when used by the tenant. His Excellency in Council, however, considers that the first principle of its taxation should be that which governs our taxation of the land itself, that is, the capability of being used rather than the use itself. If water of good quality be easily available near the surface it is more reasonable to tax such land by a light additional rate whether the water be used or not than to lay an oppressively heavy tax on those who expend capital and labour in bringing the water into use. There is, however, a point at which this principle must be modified; for when the land is such that when water is not brought to it it will bear nothing, and when water is used it will yield a fine crop, then even a light tax in the former case is impossible. Of this class are the sandy tracts in the Konkan which under the influence of water become cocoanut gardens It must be held that the right of Government to levy a rate by virtue of the water below the surface is in abeyance or dormant till the water is produced, but it is doubted greatly, even in this extreme case, whether it is politic, though it may be asserted to be just, to levy more than would be leviable from first class rice ground which enjoys also the benefits of water, not created, it is true by the tenant, but utilized by means of his preparation of the ground."

12. The Government thus declared its preference for the principle of taxing by a light additional rate land which possesses the advantage of subsoil water, whether water is used or not, to the principle of taxing the actual profits of a well when constructed. But it was added that in cases where the land has no productive capacity until water is brought to it the former principle does not apply and the assessment must be based on the use of the water.

13. The Government then stated its conclusions as to the application of the two principles to the circumstances appropriate to each in the following terms :—

"And in respect to garden lands it is true that in some districts the difficulty of ascertaining what lands have water capabilities may prevent the adoption of a system that, in lieu of taxing wells specially, taxes all land capable of producing water with a reasonable amount of trouble. Still Government would advocate the propriety of restricting the demand of Government on well lands to the maximum rate on first class dry-crop lands. An extra rate for water capabilities in all districts in which such capabilities may be easily ascertained and recorded might properly be added to the classification just as a double crop or other special fertility is dealt with. But this may not be practicable or expedient everywhere, and in all districts, such as that of Indápur in which the garden cultivation is scanty, and it is a great object to encourage it, the best policy is that which Colonel Francis has adopted."

Government Resolution No. 1211, dated 27th March 1868, paragraph 10.

14. Thus by this Resolution Government sanctioned the following two plans for adoption at the revision of each district according to the circumstances of that district, *viz.* —

1.—In all districts in which water capabilities may be easily ascertained and recorded a slight addition should be made in the classification in consideration of such capabilities as would somewhat increase the assessment of the lands which possess those capabilities over its dry-crop rate; and

2.—In districts where it is difficult to verify the existence of subsoil water advantage and especially where garden cultivation is scanty the maximum for dry-crop lands should be made the maximum for well lands also.

15. It need not be repeated that of the two principles above stated the latter was adopted in the revision settlement of the Indápur Táluka and that Government approved of the application of that principle for the reasons explained in their Resolution which has been quoted above.

16. Three years after the revision settlement of the Indápur Táluka the Mádha Táluka of the Sholápur Collectorate came in for revision. Colonel Francis applied the Indápur plan to the Mádha Táluka also, and in submitting the revision settlement proposals wrote as follows :—

"The Acting Superintendent adopted the Indápur plan of assessing well garden lands which provides for the imposition of the highest Jiráyat rate of the village on all lands irrigated from existing wells which include those constructed during the period of the settlement as well as the old ones subjected to assessment at the first settlement of the district."

17. Government approved of the plan in the case of wells which existed at the original settlement, but in the case of new wells, that is, those constructed since the settlement, issued the following order :—

Government Resolution No. 4050, dated 22nd August 1871.

"But a maximum jiráyat rate should clearly not be imposed in cases where a well has been constructed since the introduction of the survey, and that alone, and not the actual quality of the soil, warrants the imposition. To do so would in effect be to tax improvements made during the currency of a settlement, and would be in contravention of Section 30 of the Survey Act. The only principle on which such a proceeding would be justifiable would be in consideration of the water-bearing properties of the soil. But the Survey officers have admitted their inability to act on this principle generally and the result of the proposed system is to tax the man whose enterprise and labour have induced him to sink a well, while his neighbour whose land may possess precisely the same properties escapes the extra burthen, simply because he has not availed himself of his opportunities."

and further directed Colonel Francis to revise the assessment of well lands both in Mádha and Indápur in accordance with this order.

18. The general effect of this order was that in no case the rate applied to land under an old well exceeded the maximum dry-crop rate, while in the case of land under a new well the assessment was worked out at a rate applicable to land without a well according to its classification. Up to 1874 this order was followed in revising the assessment on well lands. In 1874, by Government Resolution No. 1028, dated 25th February, the above order was modified to the effect that the Survey Commissioners were empowered in the case of districts where well irrigation has been carried on on an extensive scale to impose in the case of lands under wells which existed at the original settlement at their discretion an assessment which should in no case exceed the well assessment previously levied. In all revision settlements of the drier tracts of the Deccan these orders have been strictly followed in revising the assessment on well lands. At the same time in tracts with greater command of subsoil water, notably those of the Southern Marátha Country, the principle preferred by Government, *viz.*, that of slightly increasing the classification value on account of command of water, has been found practicable and has been adopted.

19. In Gujarát the adoption of this principle was, as has been stated above, left for introduction "whenever a revision takes place." Jhálod of the Panch Maháls District was the first táluka in Gujarát that was brought under revision settlement and in it the principle preferred by Government was first introduced.

Paragraph 12 of Government Resolution No. 3107, dated 11th May 1882.

20. In sanctioning the original survey rates for this táluka Government expressed their wishes as follows :—

"The principle * * * * that land which has facility for irrigation should be classed at a higher rate than land which has not, in lieu of imposing a special rate on lands actually irrigated, might, in the opinion of His Excellency in Council, have been acted on with advantage in the case of the settlement now proposed, and Mr. Stewart should be requested to consider whether it cannot be carried out before the expiry of the two years for which the rates are now sanctioned."

21. In accordance with this Resolution Mr. Stewart made the necessary arrangement for revising the classification of the lands in the Jhálod Táluka with a view, as expressed by Mr. Stewart, "to give effect to the policy in connection with the total abolition of special well assessment announced in paragraph 32 of Government Resolution No. 2619, dated 26th March 1884, by adopting the principle preferred by Government, *viz.*, of slightly raising the classification of lands possessing water advantages on account of those advantages." Mr. Stewart framed certain rules for the guidance of the agency employed in carrying out the subsoil classification and proposed the following scale of classification. The rules and the classification scale were sanctioned by Government in their Resolution No. 7937, dated 14th November 1882, and their introduction in the Jhálod and the Dohad Tálukás was ordered "as an experimental measure" :—

Distance of Lands from Streams.	A. Under and up to 14 feet from the surface of the land.				B. Over 14 feet and up to 22 feet from the surface of the land.				C. Over 22 feet and up to 30 feet from the surface of the land.			
	I.	II.	III.		I.	II.	III.		I.	II.	III.	
			1	2			1	2			1	2
Within 20 chains	6	3	3	1½	4	2	2	1	2	1	1	...
Beyond 20 chains	5	2½	2½	1	3	1½	1½	½	1	½	½	...

22. The scale of valuation above referred to was subsequently modified as it was found that its application would bring in an amount considerably larger than that of the special well-tax intended to be abandoned. Mr. Bulkley, with the approval of the Survey Commissioner, reduced the valuation assigned to each class as shown in the subjoined statement and wrote in connection with the subject as follows :—

"I have worked out the figures for Jhálod on a scale ranging from 2 annas to 6 pies * * * * and find the net result for the táluka to be an increase of about Rs. 75. I suppose we may assume that Government will be quite satisfied with the proposed result and will not fail to sanction the rates."

The following statement shows the value of each class according to the modified scale :—

Distance of Lands from Streams.	A. Under and up to 14 feet from the surface of the land.				B. Over 14 feet and up to 22 feet from the surface of the land.				C. Over 22 feet and up to 30 feet from the surface of the land.			
	I.	II.	III.		I.	II.	III.		I.	II.	III.	
			1	2			1	2			1	2
Within 20 chains	2	1½	1½	½	1½	1	1	½	1	½	½	..
Beyond 20 chains	1½	1	1	½	1	½	½	...	½	...	...	...

23. Mr. Stewart approved of the above scale, and in submitting for the sanction of Government the assessment worked in accordance therewith, wrote :—

Paragraph 11 of Mr. Stewart's report on Jhálod Revision Settlement.

"It is intended that in estimating the extra valuation to be added to the soil valuation for each degree of advantage the circumstances of each táluka should be dealt with separately, regard being had to the condition of the people, the number of wells and their quality, the area believed to be capable of well irrigation and the amount of bágáyat assessment which it is proposed to surrender. There is a distinct advantage in dealing separately with this item of soil valuation for each tract coming under revision as the avowed intention of Government is to make the incidence of the assessment it produces as little felt as possible."

He further stated that :—

Paragraph 12 of Mr. Stewart's report on Jhálod Revision.

"The amount of the existing special cess on lands under both pakka and kacha wells and water-lifts which it is proposed to abandon in Jhálod is small, being only Rs. 742, imposed in addition to the dry-crop assessment. * * * The scale which Mr. Bulkley has applied to represent the various degrees of advantages from the highest to the lowest runs from 2 annas to 6 pies and by the application of this scale a revenue will be obtained on the occupied lands classed as having subsoil water facilities, amounting to Rs. 824."

24. It is clear from what Mr. Stewart has stated in the paragraphs above quoted that the chief point which he understood was to be kept in view in assigning money valuation to the subsoil classification scale in each táluka was, that while the assessment worked out according to that valuation should "be as little felt as possible" it should at the same time recoup the "Bágáyat assessment which it is proposed to surrender."

25. The subsoil valuation scale amended as shown above was applied to the Jhálod Táluka and was sanctioned by Government Resolution No. 6015, dated 25th July 1884. The same scale was applied to the Dohad Táluka of the Panch Maháls.

26. Next came in for revision the Dholka Táluka of the Ahmedabad Collectorate. In the case of this táluka fresh rules were drawn up for subsoil classification. An amended valuation scale was also proposed for adoption. The rules and the scale were sanctioned by Government in their Resolution No. 6342, dated 6th August 1885. The valuation scale was as shown below :—

Sweet throughout the year— Order I.			Slightly brackish— Order II.			Sweet at the commencement of the year and then brackish— Order III.			Brackish first and then turning to salt— Order IV.		
Feet 24 A.	24 to 34 B.	34 to 45 C.	24 A.	24 to 34 B.	34 to 45 C.	24 A.	24 to 34 B.	34 to 45 C.	24 A.	24 to 34 B.	34 to 45 C.
4	3½	3	3½	3	2	2	1	½	1	½	...

Subsequently, as it was found that the application of this scale would produce an amount larger than required to recoup the amount of Bágáyat assessment proposed to be abandoned, the following amended scale was adopted with the sanction of the Survey Commissioner :—

Order I.			Order II.			Order III.			Order IV.		
A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.
2	1½	1	1½	1	½	1	½	...	½	...	...

This scale was adopted in the revision of the Dholka Táluka which was sanctioned in Government Resolution No. 796, dated 3rd February 1888. The amount of Bágáyat assessment abandoned in this táluka was Rs. 6,000, while the

amount of revenue which the scale was estimated to secure was shown to be Rs. 7,200. The object that the subsoil assessment should be "as little felt as possible" was also kept in view in assigning the money valuation to the several classes of subsoil water advantages in this táluka. This is clear from the fact that the average incidence of the enhancement due to subsoil valuation on each acre adjudged to possess subsoil advantage is only 2 annas 10 pies.

27. The táluka which next came under revision settlement and in which the subsoil water classification was applied was Daskroi of the Ahmedabad Collectorate. The scale of valuation first proposed for this táluka was as shown below :—

	Order I.			Order II.			Order III.			Order IV.		
Classes.	A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.
Depth in feet.	30	38	50	24	34	46	20	32	42	18	30	...
	2	1¾	1¼	1½	1¼	1	1¼	1	½	¾		...

28. This scale was subsequently modified for the reason which has been explained in the case of the two tálukas, Jhálod and Dholka, above referred to, *viz.*, that its application would produce an amount larger than required to recoup the amount of the bágáyat assessment proposed to be surrendered.

The modified scale proposed by Mr. Bulkley was as shown below:—

Order I.			Order II.			Order III.			Order IV.		
A.	B.	C.	A.	B.	C.	A.	B.	C.	A.	B.	C.
1½	1¼	1	1¼	1	¾	¾	½	¼	½	¼	...

29. In submitting the above scale for the sanction of the Survey Commissioner, Mr. Bulkley observed—

"It will be seen that the actual values differ somewhat from those shown in my letter No. 333, dated 18th May 1887 (with which the scale first proposed was submitted) * * * and also from the actual values adopted in the case of the Dholka Táluka. It will also be understood that the reduced values proposed for adoption in the Daskroi Táluka will realize a sufficiently large enhancement. * * * * * * *" That is sufficient to recoup the Bágáyat assessment to be abandoned which was stated to be Rs. 19,421, while the amount which the amended scale was estimated to bring in was Rs. 21,852.

30. Mr. Stewart remarked with reference to the amended scale as follows :—

2. "The scale of values * * * is approved and may be enforced in the revision settlement of Daskroi. It is believed that the application of that scale to the revised dry-crop rates of assessment will result in an appreciable increase on account of irrigable advantages of about Rs. 7,200, beyond which it would not be safe to venture."

3. "At the same time the Survey Commissioner considers that the scale now recommended for the Daskroi Táluka reduces the anna valuation of the classes of subsoil water to a point below which it is not expedient to go in the valuation of irrigable lands in the Ahmedabad and Kaira Collectorates. Any further reduction of values would produce an addition to the dry-crop assessment of land which would be almost too inappreciable to secure some of the chief results aimed at. If we take 1½ anna as the valuation of the 1st class of the 1st Order it is manifest that in order to properly graduate the irrigable value of the lands with lower assessable facilities, an almost nominal value has to be assigned to them; and if we start at any thing lower than 1½ annas, it will necessitate what will be to all intents and purposes a *reductio ad absurdum.*"

31. The modified scale above referred to was applied in the revision settlement of the Daskroi Táluka which was sanctioned by Government Resolution No. 4475, dated 22nd June 1889.

32. After the revision settlement of the Daskroi Táluka had been sanctioned, Government questioned the soundness of the principle and basis on which we applied increases for subsoil water advantages and pointed out* that:—

* In their letter No. 4691, dated 2nd July 1889.

1*st.*—A difference of treatment existed with regard to equivalent subsoil water advantages in villages of two adjacent tálukas; that in one they had been valued at 2 annas while in the other the same advantages had only been valued at 1½ annas;

2*nd.*—That if the explanation was that the scale adopted is calculated just to recover existing well taxation *plus* the probable increase on revision, it would appear to rest on an erroneous basis;

3*rd.*—That well taxation having been abandoned on the ground of its being wrong in principle, the real question that arises is—What is the additional value given to land by the existence of subsoil water advantages?

33. Now there is not the slightest doubt that the principle we worked on heretofore was that of placing a small increase on the assessment of all lands adjudged capable of subsoil water advantages, sufficient to recoup Government of the loss incurred by abolishing well taxation *plus* the probable increase on revision if such well taxation were retained and to be at the same time so light that it would not be perceptibly felt by the owners of lands possessing advantages of subsoil water; consequently the scale of anna increase varied in accordance with the amount of well taxation given up and the quantity of land which during classification was recorded as capable of subsoil water advantages. If the amount of well taxation given up was small and the area capable of subsoil water increase, that is the area over which the well assessment could be spread was great, the scale had to be made low; and where the area over which the well assessment could be distributed was small and the well assessment high, a much higher scale had to be adopted to recoup the Government for the loss in well taxation.

34. Thus in Dholka Táluka a sliding scale with a two-anna maximum rate to be applied to every rupee of assessment was found to be sufficient to recoup Government and at the same time to increase the assessment by so small a figure that the result would hardly be felt by the land-holder; but in the Daskroi Táluka that same scale was found to be too high and thus a lower scale with 1½ annas for maximum was adopted and therefore subsoil water of exactly the same quality, the same depth from the surface was assessed differently in adjoining villages belonging to these two different tálukas.

35. This inequality of assessment of subsoil water advantages became more apparent and unaccountable in consequence of the increased assessment being placed, not on every acre capable of subsoil water advantages, but on every rupee of land assessment, which was determined on considerations of climate, rainfall, communications, proximity of railway lines, &c.,—various considerations which affect the value of produce and land undoubtedly, but do not in my opinion operate on the value of existing subsoil water. Thus in Dholka wherever the soil assessment rate was Rs. 2 with a two-annas scale the subsoil water advantage was assessed at 4 annas per acre, while in Daskroi where the soil assessment rate was Rs. 4 with a lower scale of 1½ annas the subsoil water advantage was assessed at 6 annas.

36. It was found that if subsoil water were classed conjointly with soil classification and a value given to it to be added on to the soil valuation and subject to the maximum rate of assessment applied to the district, the scale for subsoil water could not very well be made on a maximum of less than 1½ annas because in Mr. Stewart's own words (Memorandum No. 1658, dated 22nd August 1888) "if we start at anything lower than 1½ annas it will necessitate what will be to all intents and purposes a *reductio ad absurdum.*" This possibility has actually come before us in the Viramgám Táluka, where the loss of well assess-

ment is Rs. 1,070 and the area over which this may be spread to recoup Government, that is to say, the area adjudged capable of subsoil water advantages, is estimated at no less than 39,785 acres. If the system in force until now is adopted, a new scale will have to be devised in which the "reductio ad absurdum" must be attained.

37. In this case of the Viramgám Táluka I tried the effect of applying the 1½ anna scale made for the Daskroi Táluka, but found on examination of it in the field, with a brackish well, water being more than 40 feet below the surface, we should be letting off lands now actually irrigated and growing wheat and vegetables under irrigation without any subsoil water increase whatever. Thus looking at it in every light the old scale did not appear acceptable, and then under instructions from Government I proceeded to consider in what way some other scale might be devised for assessing subsoil water advantages, taking as basis the question "What is the additional value given to land by the existence of subsoil water?"

38. The question is a very difficult one, and the data from which to draw a fair conclusion were wanting; the little I could obtain would certainly have been insufficient if it had been intended to assess land with subsoil water advantages in exactly the same ratio as the additional value given thereby to it, as compared with land without subsoil water advantages. With that object in view, it would have been necessary to take a series of crop experiments for several years in both kinds of dry and irrigated crops, but as our object was only to obtain a scale which would—

1st.—recoup Government for the loss in well taxation;

2nd.—make an increase in the land assessment which would scarcely be perceptible;

3rd.—do away with inequalities in assessing water in one locality more or less than in another;

4th.—obtain one scale for the whole of Gujarát applicable if possible everywhere;

5th.—assess the same water advantages similarly in different localities;

I considered the data I was able to obtain as sufficient for the purpose and worked out the plan I propose as follows.

39. First of all I consulted Mr. Beyts' Manual on Agriculture in Gujarát and found (*vide* Appendix A) that deducting cost of cultivation and Government assessment the net profit on one acre of irrigated land producing for three successive years sugarcane, jowári and cotton, was estimated at Rs. 166, and making the same deductions for a dry-crop field of one acre, the net profit was estimated at Rs. 33, that is, in the proportion of 5 to 1.

40. Next I turned to the crop experiments which have been made in Gujarát since 1878-79, and I have recorded in Appendix B the results reported by the different officers making the experiments, some of whom may have estimated the cost of cultivation too high and proportionately the net profit too low, while others may have done the contrary; but taking the average of the whole I thought I was justified in concluding that a fair proportion between the relative value of the profit made on irrigated and non-irrigated lands would be obtained. Taking into consideration crops of exceptional value which have been experimented on, such as sugarcane, I obtained a general result of irrigated crops being nearly five times the net value of non-irrigated crops, but as it might be considered unfair to judge of the relative value of irrigated and non-irrigated on figures obtained with the help of such exceptional crops which can be grown only in some localities and not everywhere, I compared the results obtained from crops which are generally grown everywhere, both with and without irrigation, excluding sugarcane, and obtained the average net value of non-irrigated crops at Rs. 26-6-0 and of irrigated crops at Rs. 50-5-0 which gives the proportion of 2 to 1. Appendix B shows the result for Ahmedabad, Kaira, Surat, Broach and the Panch Maháls and the proportion of irrigated to non-irrigated is shown for each district wherever possible. I regret that the experiments are so few in number, but taking them all together as representing the result in the province of Gujarát we obtain the above proportions.

41. I next consulted the Mámlatdárs of several tálukas of the Ahmedabad Collectorate in which I proceeded on tour as regards the relative value of irrigated and non-irrigated lands. The Mámlatdárs of Daskroi and Viramgám both came to the same conclusion deduced from their general experience of the Gujarát Province, that the gross produce of fields irrigated as compared with fields not irrigated was in the proportion of 6 to 1, but allowing for the extra labour and expenditure inclusive of cost of well required for irrigated lands, this proportion reduced to actual profits to be made from the cultivation of each kind of land came to the proportion of 3 to 1. The Parántij Mámlatdár could not readily give an answer and he was therefore requested to obtain the information from trustworthy land-holders, and he has given the result of his enquiry as shown in Appendix C, which gives the average net profit on dry-crop land at Rs. 39-8-0 and the average on irrigated land with one crop of bájri grown during the rains and of a second crop of wheat grown during the fair season under irrigation at Rs. 92-4-0. This would give the proportion of 2 to 1. Further, the Parántij Mámlatdár was requested to obtain from the books of land-holders the subletting rate of irrigated and non-irrigated lands and the result is shown in Appendix D, omitting cases in which payment was made in grain. From the number of cases given I deduce that the average subletting rate for dry-crop land is Rs. 5-13-0 per acre, while that for irrigated lands is Rs. 11-6-7 per acre inclusive of interest on capital spent on improvements by landlord, which also gives the proportion of 2 to 1.

42. Thus I obtain from the above enquiries I have made the following figures:—

	Dry-crop.		Irrigated.
From Mr. Beyts' Manual on Agriculture in Gujarát ..	1	to	5
From crop experiment	1	to	2
From Daskroi and Viramgám Mámlatdár's estimate .	1	to	3
From Parántij Mámlatdár's figures	1	to	2
	4	to	12
Net average ..,	1	to	3

The net average 3 to 1 I take to be a very fairly accurate proportion of the value of land capable of and that not capable of irrigation. The only natural and reasonable conclusion to be drawn from the above figures would be that if land without subsoil water advantages is assessed at, say, Rs. 4 the land with such advantages should be assessed at Rs. 12. But to do that would be against the policy of Government, and therefore to carry out the object in view given in paragraph 38 above, I propose to take only a portion of what Government might be considered entitled to, and where it might assess the lands with subsoil advantages at three times the assessment of lands without such advantages, I propose adding to the assessment only one rupee per acre for the very best subsoil water advantages close to the surface and therefore easily obtainable.

43. Allowing for the expense of digging a well and the elements of uncertainty in doing so which may be enumerated as follows:—

1*st*.—Depth at which water is obtainable may vary:

2*nd*.—The quality of the water obtainable, whether sweet or brackish, is doubtful:

3*rd*.—The quantity of water, whether sufficient for two bags to be worked or only one, is uncertain:

4*th*.—Fear of tapping brackish or salt water which may be of little or no use, exists:

5*th*.—Fear of coming on a substratum of sand, which destroys the well and all money expended, is lost:

6*th*.—Coming in some districts on a substratum of rock which makes well-digging a very expensive business:

and which elements of uncertainty cannot be provided for or ascertained to a nicety and with any certainty when classing lands and recording them as capable of subsoil water advantages, for all practical purposes I think it would be safe to consider the proportion of the value of lands with and without subsoil water advantages as 2 to 1.

44. I have therefore taken the above 2 to 1 as the basis of my plan for assessing subsoil water. As we class our soils from 16 annas downwards I thought the best scale to adopt would be one of 16 annas downwards also. Only I do not consider that both soil and water should be subjected to the same treatment as regards the assessment to be placed thereon. Government are aware that 16 annas soil may in one locality be assessed at 2 rupees and in another at Rs. 5 or 6. This is in accordance with the principles of the Bombay Revenue Survey, the locality, climate, rainfall, roads and communications, proximity of markets and railways, ease with which surplus produce can be disposed of, value of land, &c., are all taken into consideration in fixing the maximum assessment rates in the different localities, but if these considerations were again made applicable to the water assessment also, it would amount to a double tax on position and advantages. I think for the purposes of this enquiry the existence of subsoil water should be looked upon as the existence of an instrument, if I may be allowed to term it so, by the means of which, when made use of, we obtain more valuable products from the land. Whatever the water produces, wheat, sugarcane, vegetables, &c., are all the same everywhere, and therefore the value of the same kind of water at the same depth from the surface is not greater in one place than another; it is true that in some localities the produce of irrigation is worth Rs. 40 while in another it is only worth Rs. 20, but that is in the same proportion as the values obtained for the produce of unirrigated lands and has already been considered in fixing the maximum assessment of the soil, irrespective of water in the different localities; therefore, the water, wherever the same, must be assessed the same amount irrespective of the maximum rate of the district.

45. In some districts of Gujarát, for instance, Broach and Surat, I am informed that the subsoil water is found close to the surface; in others, for instance, Viramgám, most wells are from 40 to 50 feet in depth. In the original survey well assessment was placed on wells in which water was found from 70 to 80 feet in depth; but I consider that when the subsoil water is below 50 feet the expense and labour of digging the wells and getting the water up to the surface is so great that no increase should be made on the soil assessment. I have therefore prepared a table which ranges from the surface to 50 feet, and the increases allowed for large depths will be found to be excessively small and in fact nearly nominal.

46. I propose to assess the best water perfectly sweet obtained at any depth less than 8 feet from the surface at 16 annas per acre, and that obtained within 50 feet at 2 annas. For the brackish water, the worst kind, used only for barley and occasionally for wheat crops, when obtainable within 8 feet from the surface, I propose an assessment of only 3 annas per acre, when obtainable within 30 feet of only half an anna per acre, and if obtainable deeper than 30 feet no increase at all. I beg here to call attention to the subsoil water assessment table I have prepared, which is marked E and appended.

47. To carry out my plan successfully I have thought it necessary to make the following alteration in the orders into which waters of different kinds were arranged for classification purposes by Mr. Bulkley and sanctioned by Government Resolution No. 6342 of 6th August 1885. The alteration proposed is as follows:—

> In the rules for the classification of subsoil water advantages, published with the Government Resolution above quoted, Order III water is described as "sweet at the commencement of the season, and for as long as the crops raised need irrigation; also brackish at the first and becoming still more so as the hot season approaches.—Both used for wheat and barley crops only." Thus in this third order are mixed up both sweet and brackish water, which is objectionable, as in my scale I made, as will be seen by reference to Appendix E, a greater difference between sweet and brackish than in any other part of the distribution of assessment; this is obviously necessary so as to keep the rate applied to brackish water as low as possible in the sliding scale. I propose therefore transferring the part of the description of the 3rd Order, referring to the sweet water, to the 2nd Order,

and leaving only that referring to the brackish water in the 3rd Order, so that sweet will be entirely separated from brackish in our classification of subsoil water.

48. To test the value of the 16 annas scale proposed for adoption I applied it to two tálukas already revised and settled, and to Viramgám Táluka, of which the subsoil water rating had been worked out experimentally according to the old Dholka scale. The result is given in Appendix F and may be summarised as follows:—

Táluka.	Loss in well taxation.	Recouped by revision.	Figures obtained by my scale.
	Rs.	Rs.	Rs.
Dholka	6,000	7,200	7,467
Daskroi	19,421	25,128	26,528
Viramgám ...	1,070	1,500	2,892

In the case of this last táluka the increase being larger is due to there being only few wells, a small amount of well assessment, and a large area adjudged capable of subsoil water advantages. On referring to Appendix F it will be seen that the incidence of assessment per acre for subsoil water varies in accordance with the excellence or otherwise of the water in each district. This is made quite clear in the following table:—

Táluka.	Incidence of subsoil water-rate per acre.	Subsoil water found in the following proportion of areas per cent.				
		1st Class water.	2nd Class water.	3rd Class water.	4th Class water.	Total.
	A. p.					
Daskroi	4 4	56	23	13	8	100
Dholka	2 8	20	25	33	22	100
Viramgám	1 2	½	14	31	54½	100

Thus in the best táluka with highest assessment rates and best quality of subsoil water, the incidence of water-rate assessment per acre is more than three times that obtained in the poorest táluka where most of the water is brackish.

49. As a further experiment I applied the 16 anna scale to separate individual villages, the result of which is shown in Appendix G, and may be summarised as follows:—

Táluka.	Village.	Loss in Well Taxation.	Recouped by Revision.	Figures obtained by my scale.
		Rs. a.	Rs. a.	Rs. a.
Daskroi	Usmánpur	55 0	42 12	40 8
Do.	Aspur Surpur	83 12	48 0	45 7
Do.	Chenpur	.....	58 12	58 1
Do.	Charodi	0 10	30 0	27 11
Viramgám ...	Viramgám	450 0	332 8	376 8

In applying the same scale to some of the Parántij villages I obtained the following results which are not entered in Appendix G, as that táluka is at present undergoing classification:—

Táluka.	Village.	Amount which would have been obtained by the old Dholka Scale with a maximum soil-rate of Rs. 2.	Figures obtained by my scale.
		Rs. a.	Rs. a.
Paráńtij	Ghadkan	43 4	38 9
Do.	Karol	206 15	235 10
Do.	Padhamda	21 14	35 2
Do.	Sukhad	25 10	33 0

Of the last four villages, Padhamda is a good village, water obtainable from 15 feet below surface, with 100½ acres recorded as possessing subsoil water advantages, while Sukhad is a poor village, water 30 feet and more below surface with 205 acres recorded as possessing subsoil water advantages. Comparing these, it will be seen that the better village with water nearer the surface will be taxed by my scale Rs. 35, and the poorer village with water deeper down will be taxed only Rs. 16 for 100 acres. The other two villages of Paráńtij—Ghadkan and Karol—are said to be both good villages, but in the former the subsoil water is 40 to 50 feet below the surface while in the latter water is from 10 feet downwards, and it will be seen that my scale reduces the water-tax in the former, while it increases it on the latter, as compared with the results obtained by the old Dholka scale. I think this shows clearly that the scale I have proposed works well in every way.

50. In conclusion, I beg to recommend my proposals, and in placing the matter as clearly as I can before His Excellency for his kind consideration, I trust that the plan will be approved of and early sanction given for its adoption in future revision settlements in Gujarát.

I have the honour to be,
Sir,
Your most obedient Servant,
C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner.

APPENDIX A.

Gross Produce.

	From Formulæ Statements printed.	Price-current File.	From Beyts' Manual on Agriculture.	Remarks.
	Yield in lbs. per acre.	Value of ditto according to the recent prices.	Cost of cultivation per acre.	
Holding irrigated by a well.		Rs. a. p.	Rs. a. p.	
Rotation—				
(1) Sugarcane	6,000	600 0 0	151 0 0	Average value ... ... 225 2 0 *Deduct*—Average cost 53 8 11
(2) Jowári	1,320	45 6 0	4 10 8	171 9 1 *Deduct*—Assessment per acre 5 0 0
(3) Cotton	600	30 0 0	5 0 0	Net profit ... 166 9 1
		675 6 0	160 10 8	
Holding not irrigated.				
Rotation—				
(1) Jowári	1,320	45 6 0	4 10 8	Average value ... ... 39 10 11 *Deduct*—Average cost 4 12 5
(2) Bájri	1,300	43 10 9	4 10 8	Balance ... 34 14 6 *Deduct*—Assessment per acre 2 0 0
(3) Cotton	600	30 0 0	5 0 0	Net profit ... 32 14 6
		119 0 9	14 5 4	

C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner.

APPENDIX B.

AHMEDABAD.

	Dholka.		Dhandhuka.		Daskroi.		Viramgám.		Sánand.		Parántij.		Average.	
	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.
	Rs. a.	Rs. a.	Rs. a.		Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.
Wheat ...	24 9	48 7	26 11	...	...	40 11	20 8	43 3	16 10	36 4	...	39 10	22 1	41 10
Cotton ...	12 1	...	...	...	...	...	16 4	...	31 0	...	...	.....	19 12	...
Jowári ...	27 2	...	11 12	...	...	...	...	...	23 10	...	14 12	.....	19 5	...
Bájri ...	...	...	15 1	...	27 9	...	9 1	...	...	...	...	.....	17 4	...
Math ...	...	...	...	...	...	...	...	...	...	...	3 9	.....	3 9	...
Rice	...	44 14	...	...	...	44 12	...	...	...	44 8	...	.....	...	44 11
Barley ...	...	22 3	...	...	...	30 3	...	...	...	18 12	...	.....	...	23 11
												Total ...	81 15	110 0
												Average ...	16 6	36 10

KAIRA.

	Ma'tar.		Mehmadabad.		Kapadvanj.		Tha'sra.		Nadia'd.		Borsad.		Ánand.		Average.	
	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.
	Rs. a.	Rs. a.		Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.	Rs. a.		Rs. a.	Rs. a.	Rs. a.
Bájri ...	37 13	...	...	...	...		...	...	42 8	...	...	...	...	...	40 2	...
Gram ...	26 15	...	...	...	18 7	...	...	...	...	...	...	...	...	...	22 11	...
Wheat ...	29 9	...	...	61 12	32 5	...	36 5	45 3	...	...	...	28 0	...	...	32 12	44 15
Bávta ...	121 6	...	...	...	...	...	...	...	30 10	...	...	...	...	...	76 0	...
Kodra ...	...	...	...	...	...	...	...	...	15 0	...	...	...	...	...	15 0	...
Tobacco ...	...	...	...	152 2	...	...	...	...	...	143 0	160 0	142 0	...	146 4	160 0	165 11
Sugarcane ...	...	...	...	...	...	245 0	...	431 0	...	...	...	...	...	...	...	431 0
Jiru	...	...	...	...	...	...	...	...	...	...	...	48 13	...	...	...	48 13
Barley ...	...	12 5	...	...	...	...	...	...	...	...	...	...	...	...	...	12 5
													Total ...		346 9	702 12
													Average ...		57 12	140 9

APPENDIX B—*continued.*

SURAT.

	Chikhli.		Jala'lpor.		Olpa'd.		Ma'ndvi.		Average.	
	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.
	Rs. a.		Rs. a.	Rs. a.	Rs. a.		Rs. a.		Rs. a.	Rs. a.
Jowári	25 5	.....	.....	.....	26 12	.....	...	...	26 0	...
Vál	17 9	.....	.....	.....	.....	.....	...	...	17 9	...
Sugarcane	.....	.....	250 0	505 4	.....	.....	...	...	250 0	505 4
Wheat	.....	.....	.....	.....	.....	.....	18 0	...	18 0	...
								Total ...	311 9	505 4
								Average...	77 14	...

BROACH.

	Broach.		Anklesvar.		Va'gra.		Ámod.		Jambusar.		Average.	
	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.
			Rs. a.		Rs. a.		Rs. a.		Rs. a.		Rs. a.	
Jowári	...	...	18 2	...	7 14	...	28 10	...	...	...	18 3	...
Wheat	...	...	24 5	...	10 6	...	...	...	15 7	...	16 11	...
										Total...	34 14	...
										Average.	17 7	...

	PANCH MAHALS.											
	GODHRA.		KALOL.		DOHAD.		JHA'LOD.		HA'LOL.		AVERAGE.	
	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.	Dry-crop.	Irrigated.
	Rs. a.		Rs. a.		Rs. a.	Rs. a.	Rs. a.		Rs. a.		Rs. a.	Rs. a.
Wheat...	12 15	...	...	...	26 9	20 15	43 2	...	...	...	27 8	20 15
Gram	7 13	...	3 15	...	10 1	...	27 10	...	4 5	...	10 12	.....
Bájri	14 4	...	19 3	...	...	...	...	...	...	...	16 11	.....
Jiru	21 3	...	...	...	...	...	...	...	...	...	21 3	.....
Tur	...	...	10 4	...	...	...	...	...	...	...	10 4	.....
Kodra	...	...	5 11	...	...	...	...	...	...	...	5 11	.....
Banti	...	...	7 2	...	...	...	...	...	...	...	7 2	.....
Maize	...	...	...	...	25 2	...	...	...	...	...	25 2	.....
Bávta	...	...	...	...	...	...	...	...	9 14	...	9 14	.....
										Total ...	134 3	20 15
										Average...	14 14	.....
										Grand Total ...	909 2	1,338 15
										Average ...	26 6	133 14

C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner.

APPENDIX C.

Memorandum showing produce and expenses in certain cases in the Parántij Táluka.

Dry-crop Land.

1st year—Area cultivated				5	Bighás.
Crop					Bájri.
Value of produce	Rs.	50	0	0	
Deduct—					
Expenses of cultivation	„	21	4	0	
Profit ...	Rs.	28	12	0	
2nd year—Area cultivated		5			Bighás.
Crop					Jowári.
Value of produce	Rs.	90	0	0	
Deduct—					
Expenses of cultivation	„	39	12	0	
Profit ...	Rs.	50	4	0	

Land with a well.

Area cultivated		5			Bighás.
Crop					Wheat.
Value of produce	Rs.	115	0	0	
Deduct—					
Expenses of cultivation	„	45	8	0	
Profit ...	Rs.	69	8	0	
Add—					
Value of total produce of bájri rain-crop in the same area	Rs.	22	12	0	
Profit on two crops ...	Rs.	92	4	0	

Dry-crop land.

	Rs.	a.	p.
Net profit in the first year	28	12	0
Do. do. 2nd do.	50	4	0
Total ...	79	0	0
Average ...	39	8	0

C. W. GODFREY, Colonel,
Acting Survey Commissioner.

APPENDIX D.

Statement showing subletting rates of unirrigated and irrigated lands in certain villages of the Parántij Táluka of the Ahmedabad Collectorate.

No.	Survey No.	Area		Mortgaged or sold for	Survey assessment.	Salámi.	Rent paid in cash. Rent paid to owner.	Rent paid in cash. Assessment or Salámi paid to Government.	Rent paid in cash. Total paid by sub-tenant.	Incidence of rent per acre of land.	Remarks.
							Unirrigated.				
		A. g.	A. g.	Rs.	Rs. a. p.	Rs. a.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	
1	482	5 27	5 38	1,051	18 0 0	4 1	32 8 0	4 1 0	36 9 0	6 1 6	
	483	0 11									
2	450	6 3	...	999	19 0 0	5 7	42 14 8	5 7 0	48 5 8	8 0 11	
3	484	5 4	8 4	199	27 0 0	...	37 5 4	27 0 0	64 5 4	8 0 8	
	486	3 0									
4	477	2 19	...	999	4 0 0	0 8	33 0 0	0 8 0	33 8 0	16 12 0	
5	292	0 27	...	...	1 12 0	...	6 4 0	1 12 0	8 0 0	8 0 0	
6	8	1 37	...	...	2 8 0	...	5 8 0	2 8 0	8 0 0	4 0 0	
7	11	4 4	...	...	5 0 0	...	3 12 9	5 0 0	8 12 9	2 3 2	
8	25	3 21	...	...	4 0 0	...	3 7 3	4 0 0	7 7 3	2 11 5	
9	38	2 17	...	...	3 0 0	...	2 2 9	3 0 0	5 2 9	2 9 4	
10	2	4 3	...	...	6 0 0	...	7 0 0	6 0 0	13 0 0	3 4 0	
11	5	5 10	...	...	6 0 0	...	4 8 0	6 0 0	10 8 0	2 1 7	
										63 12 7	

No. of cases.	Total incidence. Rs. a. p.	Average. Rs. a. p.
11	63 12 7	5 13 0

or Rupees 6 per acre in the case of unirrigated lands.

							Irrigated.				
1	717	2 16	...	...	7 8 0	...	36 0 0	7 8 0	43 8 0	21 12 0	
2	718	2 3	...	...	6 8 0	...	36 0 0	6 8 0	42 8 0	21 4 0	
3	297	5 24	6 31	...	20 0 0	7 2	23 10 8	7 2 0	30 12 8	5 2 1	
	291	1 7									
4	784	6 34	...	...	18 0 0	2 11	16 0 0	2 11 0	18 11 0	2 10 8	
5	1	2 20	3 35	...	10 0 0	...	40 8 0	10 0 0	50 8 0	12 10 0	
	Part of 2	1 15									
6	485	5 7	...	...	6 0 0	5 5	20 0 0	5 5 0	25 5 0	5 1 0	
										68 7 9	

No. of cases.	Total incidence. Rs. a. p.	Average Rs. a. p.
6	68 7 9	11 6 7

or Rs. 12 per acre in the case of irrigated land.

C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner.

APPENDIX E.

Table proposed for Adoption. Increase per acre, 1st Class.

	A.	B.	C.	D.	E.	F.
Depth up to and inclusive of feet	8	14	20	30	40	50
1st ... Sweet water	16	12	8	6	4	2
2nd ...	12	8	6	4	2	1
3rd ... Brackish and salt	6	4	2	1	½	...
4th ...	3	2	1	½	...	...

C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner.

APPENDIX F.

Statement showing the result of the application of the 16 Anna Scale to the three Tálukas (Dholka, Daskroi and Viramgám) of the Ahmedabad Collectorate.

Name of Táluka.		1st Class.						2nd Class.						3rd Class.						4th Class.						Total.	Incidence per Acre.	Loss in well taxation.	Recouped by revision.
		A.	B.	C.	D.	E.	F.	A.	B.	C.	D.	E.	F.	A.	B.	C.	D.	E.	F.	A.	B.	C.	D.	E.	F.				
Dholka.	Acres	...	...	...	9,102 15	...	...	...	...	...	11,317 22	14 12	...	...	...	...	14,323 26	528 15	107 3	...	...	...	9,974 17	...	...	45,367 30	Rs. a. p. 0 2 8	Rs. 6,000	Rs. 7,200
	Rs.	...	...	...	3,413	...	...	...	...	...	2,830	2	...	...	...	...	895	16	...	...	...	...	311	...	...	7,467 0			
Daskroi.	Acres	...	...	...	50,936 21	3,006 13	524 3	...	...	...	16,209 22	5,544 30	493 14	...	...	8,529 26	3,744 3	334 24	...	...	...	7,086 1	1,069 17	...	...	97,528 14	0 4 4	19,421	25,128
	Rs.	...	...	...	19,101	752	66	...	...	...	4,052	733	31	...	...	1,066	234	12	...	...	...	443	38	...	...	26,528			
Viramgám.	Acres	...	...	...	155 18	...	...	...	...	...	5,571 39	15 3	...	...	...	...	12,200 1	100 25	...	...	...	...	21,580 7	161 36	...	39,785 9	0 1 2	1,070	1,500
	Rs.	...	...	...	58	...	...	...	...	...	1,393	2	...	...	...	...	762	3	...	...	...	...	674	...	...	2,892			

In Viramgám the large increase is due to the very large area adjudged capable of subsoil water advantages as compared with the areas irrigated, classed formerly as garden and assessed at Rs. 1,070 only.
Figures given in smaller type are not strictly correct, but are approximately so; some variation, probably an increase, might be expected by a strict application of the rates according to actual depth of water found in wells which formerly was not everywhere recorded, but only A., B., C., under each class of water in the classification books.

C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner

APPENDIX G.

Statement showing the result of the application of the 16 Anna Scale to certain individual villages in the Daskroi and Viramgám Tálukas of the Ahmedabad Collectorate.

Táluka.	Name of Village.	1st Class.						2nd Class.						3rd Class.						4th Class.						Total.	Incidence per Acre.	Loss in well taxation.	Recouped by Revision.
		A.	B.	C.	D.	E.	F.	A.	B.	C.	D.	E.	F.	A.	B.	C.	D.	E.	F.	A.	B.	C.	D.	E.	F.				
Daskroi.	Usmanpur. Acres	...	...	..	...	...	...	...	...	...	161 38	...	..	...	..	...	...	...	...	...	...	...	...	...	...	161 38	Rs. a. p.	Rs. a.	Rs. a.
	Rs.	...	...	...	...	...	...	...	...	...	40 8	...	..	...	...	...	...	...	...	..	...	...	...	...	...	40 8	0 4 0	55 0	42 12
	Aspur Surpur. Acres	...	...	...	121 18	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	121 18	0 6 0	83 12	48 0
	Rs.	...	...	...	45 7	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	45 7			
	Chenpur. Acres	...	...	...	...	..	...	...	...	...	104 21	...	...	...	...	210 9	...	...	...	...	...	90 27	...	...	...	405 17	0 2 3	...	58 12
	Rs.	...	...	...	...	...	...	...	..	...	26 2	...	...	...	...	26 4	...	...	...	...	...	5 11	...	...	...	58 1			
	Charodi. Acres	...	..	...	...	...	...	...	...	...	13 19	...	...	...	..	31 15	...	...	...	...	...	329 5	...	..	...	373 39	0 1 2	..	30 0
	Rs.	...	...	...	...	...	...	...	...	...	3 4	...	...	...	...	3 14	...	...	...	...	...	20 9	...	...	...	27 11			
Viramgám.	Viramgám. Acres.	...	...	...	23 6	...	...	...	...	...	1,234 13	..	...	...	...	...	239 25	...	...	...	...	...	1,419 34	...	...	2,916 38	0 2 1	450 0	*332 8
	Rs.	...	...	...	8 10	...	...	...	...	...	308 8	...	...	...	...	...	15 0	...	...	...	...	...	44 6	...	...	376 8			

* Amount marked thus shows that which would probably have been occupied on revision if the old Dholka Scale were applied.

C. W. GODFREY, Colonel,
Acting Survey and Settlement Commissioner.

Revenue Survey and Assessment: Proposals for the Classification of the subsoil water advantages in the different Districts of Gujarát.

No. 2282.

REVENUE DEPARTMENT.

Bombay Castle 29th March 1890.

RESOLUTION.—In Gujarát the total abolition of special well assessment and the adoption in the survey settlement of the plan of taxing subsoil water advantages by an exceedingly slight increase of the soil rates on the lands possessing such advantages was first introduced in 1882 in the settlement of the Jhálod Táluka of the Panch Maháls District. In order to carry out the instructions of Government in this matter, certain rules for the guidance of the agency employed in carrying out the subsoil classification were framed and a certain scale was proposed. These rules and this scale were finally sanctioned in Government Resolution No. 6015, dated 25th July 1884. The same scale was applied to the Dohad Táluka of the Panch Maháls District and a similar scale was sanctioned for the Dholka Táluka of the Ahmedabad District. The chief point kept in view by the local officers in proposing the scale in each táluka was that while the assessment determined upon according to that scale should be as little felt as possible, it should at the same time recoup the well assessment which it was proposed to surrender.

2. In sanctioning the revision settlement of the Daskroi Táluka, however, it appeared to Government that a different treatment had been adopted in respect of equal subsoil water advantages in the villages of two adjacent tálukás, *viz.*, Dholka and Daskroi; in one táluka those advantages had been valued at 2 annas whilst in the other similar advantages had only been valued at 1½ annas. This gave rise to serious doubts concerning the soundness of the principle of placing a small increase on the assessment of all lands held to enjoy subsoil water advantages, sufficient to recoup Government for the loss incurred by abolishing well taxation *plus* the probable increase on revision if such well taxation were retained. A report on the subject was therefore called for and the Survey and Settlement Commissioner has accordingly in his letter No. 118, dated 15th January 1890, submitted a full explanation of the system of assessing subsoil water advantages in Gujarát.

3. The main point in this report which calls for the orders of Government is whether instead of basing the assessment of subsoil water advantages on—

1*st.*—The amount of well assessment to be foregone, and

2*nd.*—A ratio to the dry-crop assessment (*i.e.*, the assessment *minus* the water advantages);

it should be based as now proposed on—

1*st.*—A scale generally applicable irrespective of receipts from well assessment, and

2*nd.*—The acre and not the dry-crop rate.

4. On careful consideration of the subject His Excellency the Governor in Council is pleased to direct that the course now suggested for adoption should be followed and that the scale proposed by the Survey and Settlement Commissioner in Appendix E to his report should be made applicable in assessing subsoil water advantages. Due publicity should be given to the scale when applied in order to afford an opportunity to occupants who may consider themselves aggrieved by its operation to make such representations as they may desire to offer, and to bring their objections in special cases, should such occur, to the notice of Government.

JOHN NUGENT,
Chief Secretary to Government.

Extract paragraphs 11 to 15 and 55 and 56 of the Deputy Superintendent, Gujarát Survey's Report No. 105, dated 13th February 1890, on the Revision Survey Settlement of the Viramgám Táluka.

11. From the foregoing description of the soil of Viramgám it will not at all appear surprising that the subsoil water also partakes of a strong saline character. Indeed out of an area of Government occupied land of 145,601 acres, only 37,677 acres have been adjudged to possess subsoil water advantages, and out of this but 10 acres have sweet underground springs. Moreover, the quality of these springs is liable to deteriorate, as several wells, which were sweet at the first survey, are now quite brackish. In classing the springs we always use every precaution it is possible to us from the indications around us; and we invariably give the benefit of the doubt to the cultivator. This will be patent from the fact of our having exempted 74 per cent. of the culturable area from the incidence of our subsoil water assessment.

12. In this connection I cannot but give expression to my opinion, formed after much care, that, in jiráyat soils impregnated with salt, like those of Jalisna, Vanpardi, Vichan, Dalod, &c., the use of subsoil water of the 4th order, *i.e.*, almost briny, is more detrimental than otherwise, and should not be assessed. By the use of such water you may get a crop that will pay a small return, but this is more than counterbalanced by the injury it does to the field by the deposit thereon of salt to such an extent that, it requires the action of one or more rains to sweeten it, and render it again fit for profitable jiráyat cultivation. The fact that it is used here and there, I think, ought not to count for much, for the Koli cultivator (for it will be found that it is nearly always a Koli) invariably looks to the present, and very often he cannot help himself, for he has to please the Bania who enabled him, with loans, to build the well. In my humble opinion, water of the 4th order should be assessed in connection with rice lands only, for not only is salt water congenial to rice, but as rice is grown in low-lying lands and in standing water, much of the salt that would be deposited on them from its use would be carried away by the monsoon floods that wash over them.

13. In the preceding revision settlements, in giving effect to the liberal policy of Government not to tax private improvements, we have, in respect of well irrigation, discarded the garden *kasar*, which was a heavy rate, and recouped Government by spreading the amount thus relinquished over the whole area adjudged to possess subsoil water advantages. Government having pronounced against the correctness of this principle, from henceforward it will be substituted by another which is involved in the question,—what is the value given to land by the existence of subsoil water fit for irrigation? The way that seemed best to me to work it was to discover the profit derivable from an acre of land of the different varieties cultivated with and without irrigation. The data thus obtained would show the actual profits due to irrigation; and these should be looked upon as capital amounts which Government have, as it were, entrusted to the cultivators to make use of, for which Government would be entitled to charge a low interest of, say, from 2 to 4 per cent. With the amount of the interest worked out in each case, it would have been possible to have constructed a sliding table, in which allowances would have been made for circumstances reducing the profit of irrigation, such as the depth of wells and the brackish qualities of the water. Though, in theory, this mode looked promising, to carry it out properly, I discovered that it would require the expenditure of a great deal of time and money which we could ill afford. For, I found afterwards from actual experience, how hopeless it was to expect patels to help one honestly and truthfully in such an enquiry, which would naturally have to be made in selected places all over Gujarát.

14. The table constructed by Colonel Godfrey, which has received the approval of all the authorities concerned, has the merit of carrying out this principle in a simple manner, and will work as well as any mechanical rule can, which takes no cognizance of the condition of the country and its population. Cases will be met with, and that in the near future, where people wanting in all the qualifications which go to secure success in any walk of life are in occupation

of a country possessing all the facilities for subsoil water irrigation; and others, in which the conditions are reversed. In the former, the table will yield results far too high as compared with the actual water revenue of the district; and it will either be necessary to forego a part of the new assessment for the period of the next lease, or to have lower soil maximum rates than would be resorted to if the restraining circumstances had not existed. This is a point which, I think, it would be very advantageous to have authoritatively settled now; as, otherwise, its discussion may come on at a time when it may have the effect of throwing back the settlement of perhaps the next district for a whole year. In my humble opinion, the former course,—that is, the foregoing a part of the new water revenue for the period of the next lease,—is the more preferable one; for, this would not only allow of cognizance being taken of the present very backward condition of the people and the country, but also enable the settlement officer at the succeeding revision, in case the country has in the interval made great strides in well irrigation, to take not only the part of the subsoil water revenue now temporarily relinquished (which could not by any means be considered a tax on improvements), but any increase on the soil revenue which the progress made by the country would justify.

15. Colonel Godfrey's table applied to Viramgám gives a water assessment of Rs. 5,044 approximately, the water revenue for last year having been Rs. 1,092. Were it not for the opinion held by me on the subject of water of the 4th order as applied to jiráyat soil, and that soil so generally impregnated with salt as is that of Viramgám—an opinion to which I have given expression in paragraph 12, I would consider this increase of 362 per cent. as justifiable; but under the circumstance I would respectfully urge that some means should be found to reduce it; and the means that I would recommend is that Government should give up assessing water of the 4th order in connection with jiráyat soil (in the case of rice land the assessment should be retained) when it is not a matter of doubt, as is in this case, that its use has the direct result of reducing the fertility of the field to which it has been applied for a year or two. In a community of advanced cultivators self-interest might be assumed as a fixed rule by which the people are guided in all their undertakings; but I state from experience that, when the people are Kolis, like those who form the great majority of the Viramgám cultivators, and who, not quite two generations ago, were noted for their restless and plundering habits only, so much so, that troops had to be sent against them twice to bring them into subjection, such an assumption would be unsafe; and the more prudent course for the settlement officer to follow would be to depend on his own observations of the natural condition of things, anomalous though they may at first sight appear.

55. The subjoined table shows the estimated result of the application of the proposed rates to all the Government lands, occupied and unoccupied, of the táluka. It is an abstract of Appendix O :—

Class.	Number of villages.	Maximum dry-crop rate.	By former Survey.		By Revision Survey.						Percentage increase.
			Government occupied land.		Government occupied land.		Government unoccupied land		Total.		
			Area.	Assessment.	Area.	Assessment.	Area.	Assessment.	Area.	Assessment	
		Rs. a.	A. g.	Rs. a.	A. g.	Rs. a.	A. g.	Rs. a.	A. g.	Rs. a.	
I	13	2 8	40,496 11	46,614 14	40,390 32	63,591 5	1,447 0	2,489 12	41,837 32	66,081 1	36¼
II	44	2 2	83,035 36	91,583 14	82,845 36	1,21,910 1	4,295 34	5,423 6	87,141 30	1,27,333 7	33
III	10	1 14	18,642 24	16,443 8	18,653 36	21,592 13	1,754 3	1,549 12	20,407 39	23,142 9	31¼
IV	2	1 4	3,833 18	1,851 6	3,710 7	3,093 0	289 32	84 6	3,999 39	3,177 6	67
		Total ..	146,008 9	1,56,493 10	145,600 31	2,10,187 3	7,796 29	9,547 4	153,387 20	2,19,734 7	34½

56. It will be perceived that the new rates give an increase on the occupied area of Rs. 53,693, or nearly 34½ per cent. In paragraph 12 of this report I have strongly recommended the abolition of the assessment in connection with subsoil water of the 4th order as irrigating jiráyat lands. The following figures

will show the extent of jiráyat land classed for subsoil water of this order in each group, and its assessment:—

	Acres.	Rs. a.
Group I	5,995	374 11
Group II	9,402	587 10
Group III	1,949	121 13
Group IV	1,741	108 14
	19,087	1,193 0

The area to be relieved is 19,100 acres and the amount to be given up about Rs. 1,200. If my recommendation is approved of, it will reduce the percentage increase on each of the four groups as follows:—

	From	To
Group I	36½	35½
Group II	33	32½
Group III	31¼	30½
Group IV	67	61¼

It may be urged that the amount that would be remitted is small; but I would submit that we should only consider whether by not remitting it we do not act counter to our profession, that we mean to impose a light water-rate only on such lands as possess *subsoil water advantages.*

Extract paragraph 6 of the Collector of Ahmedabad's Memorandum No. 546, dated 3rd March 1890, forwarding Deputy Superintendent's Report on the revision settlement of the Viramgám Táluka.

6. Paragraphs 11 to 15 of the report deal with subsoil water. The Deputy Superintendent finds the whole táluka so salt that only 24 per cent. of the area is assessed for this advantage, and out of even that he considers that the water of the 4th order to be so absolutely harmful when applied to the soil, except in the case of rice crops, that he would forego charging the people for so very questionable a benefit. I would strongly support the proposal. It appears that in this Salt Táluka, where the wells at present yield a revenue of Rs. 1092 the water assessment will, according to Colonel Godfrey's new scale come to about Rs. 5,044. In all the discussions that have taken place, I understood that the object of Government has been to give the rayat well water as nearly free as possible, provided only that the state be recouped for the well revenue that it abandons by a trifling charge upon all those who own land with subsoil water fit for irrigation below it. The least therefore that Government can in fairness do, is to abandon the assessment of 4th grade water altogether. The maximum rate of the scale to the rest has not been stated, but it strikes me as probably capable of reduction.

Extract paragraphs 3 to 7 of the Survey and Settlement Commissioner's Report No. 564, dated 26th March 1890, submitting remarks on the above correspondence.

3. In his report No. 105, dated 13th February 1890, Mr. Fernandez, the Deputy Superintendent, recommends the absolute relinquishment of all increase of assessment due to the subsoil water advantages of the 4th order, and the Collector supports the proposal; further, Mr. Fernandez discusses possible difficulties which may arise in applying the new valuation scale for subsoil water, and the Collector has made thereon lengthy remarks terminating with his proposal to remit the excess if the 33 per cent. limit is exceeded, and finally in the Collector's remarks the point is raised as to whether the 33, 66 and 100 per cent. limits are to include the subsoil water assessment or not.

4. To begin with the last question, I beg to state that Government Resolution No. 2619 of 26th March 1884, places certain restrictions on the enhancement of revenue: the land revenue referred to is obtained from the asssessment of land, and that assessment is fixed in accordance with the quality and capabilities of the soil, and therefore subsoil water being an inherent quality or capa-

bility of the land, the assessment of this advantage or capability is most decidedly part of the land assessment and, as such, must be subject to the limitation of increase. It is true that the existence of subsoil water was not formerly taken into account, but that it was omitted in the original classification of the soils is no reason why it should not be considered as a quality of the soil which had been overlooked, or why the increase made for this advantage should now be made in excess of the limit of enhancement allowed by Government. I have, therefore, dealt with it as part of the classification of the soil and considered it as giving a higher value to the land which has that advantage; and as the assessment of the land is increased thereby, that increase, together with the increase brought about by the raising of the maximum rates, must, I consider, be subject to the limitation of enhancement.

5. Now, with regard to the first question of relinquishment of subsoil water assessment in all cases where the water is of the 4th order, I must observe that, in my opinion, Mr. Fernandez has a very exaggerated idea of the harm done to the soil by the use of brackish water, and I am entirely opposed to his proposal; but, as it might be considered presumption on my part, with the little knowledge I have of the province of Gujarát, to condemn Mr. Fernandez's proposal on my own opinion, I will try to show that it should be disallowed for other reasons. First it must be remembered that there is nothing new in the method of classing the subsoil water under four different heads. Mr. Bulkley, the late Deputy Superintendent of the Gujarát Survey, who spent the whole time of his service in Gujarát and whose knowledge of those districts, of their soil and water capabilities, and of their agriculture is, I may say, unequalled, prepared the scheme, since approved of by Mr. Stewart, the Survey Commissioner, and sanctioned for adoption by Government Resolution No. 6342, dated 6th August 1885; and in this scheme for assessment of subsoil water, all kinds of water obtainable in Gujarát were classed into four different orders, the last of which, the 4th order now objected to, is described as "from the first so brackish as to be undrinkable and turning to salt later on. Used only for barley and occasionally for wheat crops." Mr. Bulkley saw clearly that the water could be and was used advantageously, for otherwise he would not have admitted that class of water in his classification of assessable advantages, and I myself have seen at Viramgám wheat, brinjals and onions growing in a place where the water was certainly very brackish and evidently used extensively for other crops, as shown by the existence of small water channels, in land which Mr. Fernandez would according to practice have classed as possessing 4th class water advantages, and this he would now leave totally unassessed for that advantage. Such brackish water as that described above is the very worst which may be said to be fit for irrigation, and consequently it is assessed extremely low. The figures given by Mr. Fernandez in his paragraph 56 appear large when considered as several hundreds of rupees, but when the area over which that sum is spread is taken into account and the incidence per acre worked out, it is found to be throughout only 1 anna per acre of land which has a certain degree of subsoil water advantage, sufficient at any rate to save a crop in case of scarcity of rain and certainly better than other fields which have no such advantage. Further, it would not be amiss to point out that if the use of water of the 4th order were, as stated by Mr. Fernandez, so harmful and detrimental to the interests of the cultivators, it would not be so generally used: one fool might be found who did not know better, but the generality of the cultivators would not use brackish water if it was downright harmful. There is, I apprehend, very little in the way of improvement in agriculture which we can teach the cultivators of Gujarát, and if they use the 4th order water for irrigation, we may depend on it that there are advantages in doing so, and assessing such advantages at 1 anna per acre cannot be wrong; if anything, it may be too lenient. In paragraph 11 of his report Mr. Fernandez states that there are 37,677 acres adjudged capable of subsoil water, of which only 10 acres have sweet underground springs; therefore it may be assumed that in Viramgám all subsoil water is brackish, and still the use of the water is so much appreciated that with a well assessment of Rs. 8 and 5 per *koss*, or water-bag, placed on existing wells at the time of the original settlement the number of wells have increased during the term of the lease 108 per cent. (para. 16).

6. As regards the possible difficulties which may arise in applying the new valuation scale for subsoil water, I must observe that Mr. Fernandez's remarks and arguments, which appear to me rather difficult to follow, have been summarised by the Collector, who gives the two following cases :—

1st.—Water exceedingly good, but people thriftless and disinclined to use it.

2nd.—Water poor, but existing well revenue good.

In the first case it is argued that the revenue from subsoil water will be so large that the legitimate maximum rates of the soil will have to be lowered. It would be rather difficult to describe, first of all, what is the legitimate maximum rate; the maximum rates are dependent on improvements, rise in prices and general condition of the district, and therefore the legitimate maximum rate should be in proportion to the degree of prosperity attained now as compared with what it was at the time of the original settlement; but this legitimate maximum is never reached, because, 1st, of the limit of increase imposed by Government, and, 2nd, in consequence of adjustments of classification made in view of the clearer understanding of the subject we have now acquired. The subsoil water forms, as stated above, part of the valuation of the land, and therefore, as such, it must affect the adoption of a maximum rate, of which the legitimate limit is the 33 per cent. allowed. We cannot allow the subsoil water rate to be foregone as suggested, no more than we can allow any other quality of the soil to be overlooked for fear of the result. There is also an advantage in adopting a lower maximum rate in consideration of the increase of revenue given by the subsoil water rate which seems to have been overlooked, and that is, that by the application of a lower maximum, lands which have not the advantages of subsoil water will be assessed somewhat lower than they would have been otherwise. That this is only fair and proper, will hardly be disputed.

With regard to the second case put by Mr. James, I beg to observe that the subsoil water rate scale as now proposed is not variable, is made to apply everywhere, and will produce a result proportionate to and justified by the quality of the water, the distance from the surface at which it is obtainable, and the area of land adjudged capable of subsoil water advantages. In some cases, as in this táluka of Viramgám, the result may be greatly in excess of the well assessment which has been abandoned, and in other districts where the well revenue is large it may fall short of that amount. The object is undoubtedly to recoup Government for the loss of well taxation, but at the same time it is also to put a slight and equitable increase on all the lands possessing special advantages, which will hardly be felt and which will make some slight difference between the assessment of these lands and others which have not got such advantages. By classing the lands for advantages of subsoil water we take into consideration an additional quality inherent in some lands which is not possessed by all; and therefore whether the very small increase made on the assessment per acre is sufficient to recoup Government for the loss of well taxation, or whether more than required to do so is obtained, is not material. Recouping the Government loss is not the only one and primary object to be attained, and I can see no reason why Government should be tied down to taking so much, and no more, for those advantages. In the Viramgám Táluka there are 37,677 acres of land adjudged capable of subsoil water advantages which produce by the new scale Rs. 5,044. This gives an incidence per acre, on the whole, of barely 2 annas and 2 pies, which is extremely moderate, and may truly be said to be an increase hardly perceptible for an advantage which if made use of will double and treble the profits of cultivation.

Some of Mr. Fernandez's arguments and apparently the Collector's also appear to be based on the cultivating class of Viramgám being principally thriftless, ignorant Kolis; but that the assessment of land cannot be made to depend on a consideration of whether the landholder is a poor Koli or a rich Pátidár, has already been shown by Mr. Stewart in paragraphs 24 to 26 of his report No. 755, dated 16th April 1889, on the revision settlement of the Daskroi Táluka; and I need only add that our classification valuation for soil as well as for water, and consequently our assessments, are all worked out on fixed principles, and the land, whether belonging to a man fully capable of turning it to the best account or to a careless, thriftless and ignorant Koli, is assessed according

to its natural capabilities, and these principles of justice we must adhere to whatever the ultimate consequences may be. The remarks made in the last part of paragraph 15 of Mr. Fernandez's report regarding the restless and plundering habits of the Kolis and the more prudent course for the settlement officer to pursue can have no force now; for writing as far back as 1859 Mr. Rogers in paragraph 10 of his letter No. 91 to the Collector of Ahmedabad says: "I have not the least doubt, however, in my own mind, that the time has arrived for abandoning a policy which was probably the only safe one in the days before our rule had been properly consolidated in the country, and the turbulent tribes had to be bought over to the industrious habits of cultivators at the cost of the sacrifice of the principle that the proportion of the surplus produce of the soil to be contributed towards the support of the State by all cultivators should. "*cæteris paribus*," be the same."

7. The subsoil water classification has been done exactly in the same manner as that of the Daskroi Táluka, only instead of applying the anna valuations given in the table for Daskroi, the assesment has been increased by a small amount per acre, in accordance with the table given as an appendix to my report No. 118, dated 15th January last, on which Government orders have not yet been received, but which will probably be issued before this reaches you. In order to show that the new scale of assessment for subsoil water proposed for adoption in my letter quoted above, and actually applied in Viramgám in anticipation of Government sanction, has nothing to do with the increase of assessment obtained thereby for the 4th order of water which it is proposed to abolish, I beg to point out that if no new scale had been proposed, and the old scale of subsoil water assessment made applicable to the Daskroi Táluka had been adopted, the increase would have been for the whole táluka still greater.

Subsoil Water Assessment.

	By Daskroi scale.	By new scale.
1st group	482	387
2nd group	697	656
3rd group	135	145
4th group	71	114
Total ...	1,385	1,302

Thus by the adoption of the Daskroi scale the 4th order of subsoil water would have been assessed for the whole táluka 83 rupees more than it has been assessed by the adoption of the new scale, which is certainly advantageous for the cultivators where the water is brackish. The figures given above for the new scale are in accordance with a statement received with Mr. Fernandez's letter No. 171, dated 13th instant.

Extract paragraphs 2 to 5, of the Commissioner N. D.'s Memorandum No. 1106, dated 10th April 1890, submitting remarks on the above correspondence.

2. When Mr. James forwarded this report as Collector of Ahmedabad, Government Resolution No. 2282 of the 29th March 1890 and the Survey Commissioner's report No. 118 of the 13th January 1890 had not been issued. The exact lines on which the new valuation scale for subsoil water would be worked were not, therefore, before him, and he was under the impression that the maximum scale of Re. 1 per acre for the best water was liable to alteration, just as the maximum rate for subsoil.

3. It is now clear that Colonel Godfrey proposes and Government have sanctioned the keeping of the maximum rate for water and the valuation scale for the different orders of water the same in every district, regardless of the amount of the existing well revenue, and adjusting the differences between the values of irrigated land in different parts by variations in the maximum rate and classification of the *soil* alone. The reasons for adopting this course have been so clearly explained, and the scale answers so far so satisfactorily, that the Commissioner has only now to express his entire concurrence; at the same time he considers that the financial results should be carefully watched.

4. One question, however, does not seem to have been definitely settled by the Government, *viz.*, whether the limit which Government have prescribed for increasing assessment upon revision should be inclusive or exclusive of the proceeds from subsoil water. The Survey Commissioner considers that it should be inclusive, but the Commissioner is of opinion that this would involve a needless sacrifice. Where the proposed rates, both of soil and water combined, do *not* come up to the limit assigned, the question of course does not arise. But some very rich tálukás in Gujarát will, before long, come under revision, the revised assessment on which would, there can be no doubt, have, in the natural order of things, largely exceeded the limit. It will be necessary, then, to cut down the maximum soil rates considerably, and the Commissioner is of opinion that in such cases it will be an advantage if the subsoil water revenue is kept outside, as the old well assessment was always treated as an extra. Although the policy of collecting only so much revenue from subsoil water as would cover the old well assessments has been abandoned, still it is an object with Government not to lose that revenue altogether, as will be the case if the combined soil and water revenue are restricted to the percentage limits fixed.

5. The Commissioner regrets that Colonel Godfrey's arguments fail to convince him that Mr. Fernandez's proposal to remit the assessment of 4th class water, except where applied to rice, is not judicious. Government do not want to make a large revenue out of this new impost (if so it may be called). The water in Viramgám is so salt and bad that Government should be above taxing it. Colonel Godfrey argues that the number of wells have doubled during the currency of the settlement and therefore they cannot be so harmful as Mr. Fernandez thinks; and he appeals to Mr. Bulkley's authority. But where bad is the best, there is no wonder at the rayats endeavouring to make the best of that bad, and what is more, many of these wells, which when freshly dug were comparatively sweet, afterwards turned salt. A valuable and expensive well dug by the B. B. & C. I. Railway Company at Viramgám has just caused loss and disappointment to the company in the same way. The Survey Commissioner would not like to see the symmetry of the scale destroyed, and points out that 1 anna an acre all round is not much to pay for brackish water. But the maximum is 2 annas, and to fix 2 annas an acre on A's land, because his neighbour has dug a pit of brine in an adjoining field, which A himself would rather not have the doubtful benefit of, seems to the Commissioner hard. The Commissioner would, at any rate, recommend the remission of the 4th class water in Viramgám. He would recommend it indeed everywhere, but it is better not to proceed too fast, and each case can be judged on its merits. In any case, the Commissioner considers the rating of 4th class water too highly pitched; conversely, the Commissioner is led to believe that. later on, cases may be found where the 16 annas on the best water is not sufficient.

Extract paragraph 4 of Government Resolution No. 3606, dated 23rd May 1890 passing orders on the above correspondence.

4. Government are of opinion that Colonel Godfrey's view that the *total* increase of assessment must be limited to 33 per cent. is unquestionably correct, and that the subsoil water-rate cannot be treated as a cess standing by itself and entirely apart from the soil assessment as suggested by the Commissioner, N. D.

Extract paragraphs 38 to 47 of the Deputy Superintendent Gujarát Survey's Report No. 202, dated 23rd March 1890, on the Revision Survey Settlement of the Ghoga Táluka.

38. To propose new rates for these 4 Gogha villages would, under ordinary circumstances, have been a simple matter, but the new principle of subsoil water assessment has rendered it one of unusual difficulty.

39. Although the survey lease that has expired has been shown to have benefited the villages much, and the state of the country as regards roads has improved in a remarkable manner; and although also the prices of its staple products have risen about 40 per cent., yet, having regard to the poor quality of the soil as shown in the margin, I think we should not be justified in taking a revenue during the new lease which shall be more than 20 per cent. in advance of the present yield, except from Gogha, the soils of which were originally under-classed, but the classification of which was brought up to the right level during the revision survey.

	Average classification value. Rs. a. p.
Karera ...	... 0 6 1
Mota Khokhra	... 0 5 2
Gogha ...	... 0 7 5
Bhekda ...	... 0 5 11

40. The extent of the lands adjudged to possess subsoil water facilities in each of the 4 villages, as also the amount of the assessment to be levied on them according to Colonel Godfrey's table, and other cognate data, are as follows:—

No.	Name of Village.	Occupied Area by Revision Survey.	Present Revenue.	Subsoil Water.		Deduct present Water Revenue.	Balance.	Percentage Increase.
				Area.	Assessment.			
		Acres.	Rs.	Acres.	Rs.	Rs.	Rs.	
1	Karera	1,856	1,527	1,464	748	114	634	41·5
2	Mota Khokhra ...	538	463	338	142	137	5	1·1
3	Gogha	121	109	93	10	...	10	9·2
4	Bhekda	1,094	1,205	807	343	177	166	13·8
	Total ...	3,609	3,304	2,702	1,243	428	815	24·6

41. It will be seen from the foregoing that the subsoil water assessment alone, in one instance, produces an increase on the entire revenue of the village of over 40 per cent.; and in another, of nearly 14 per cent. If, therefore, the calculation is based on the revenue proportionate to the extent of the subsoil water area, as it is fair to do, the increase on the areas concerned would be much larger than the above figures show; which would imply that, for some of the villages at least, we cannot have an increased soil maximum rate, because that would send the percentages up still higher. And if we do not have such rates in addition, then the result would be that the area that has not been adjudged to possess subsoil water advantages would escape having to pay any contribution whatsoever towards the general increase for the period of the next lease.

42. The only way out of the difficulty seems to me is to have, first of all, new soil maximum rates for the táluka at an advance of about 20 per cent. over the old. The effect of this will be what justice requires,—that is, that land, without any subsoil water fit for profitable use, will pay about 20 per cent. more than it has been paying; while the land that has subsoil water advantages will pay this increase, *plus* the percentage,—to be kept within bound if necessary by the limitation rule,—on account of subsoil water irrigation facilities. In the case of any surplusage in the latter item, it should be conditionally withheld till the beginning of the next lease.

43. Before proposing new maximum rates, it is necessary that I write here, at length, about the Jhálod and Dohad (tálukás of the Panch Mahál) method of subsoil water classification, which was adopted by my predecessor for Gogha. Properly speaking, this should form the subject of a separate communication, but, in order not to delay the submission of this report, I feel obliged to treat it here.

44. The tálukás of Ahmedabad which we have hitherto revised are perfectly free from all rocky formation. However deep it has been found necessary to go down in search of springs in them, the passage has never been through any harder substance than a shallow stratum of kankar occasionally. Gogha, however, lies in a hilly country the same as Jhálod and Dohad, and the subsoil rules, framed by my predecessor for the latter, were made applicable to the former.

45. There are three classes as explained in paragraphs 8, 9 and 10 of the rules, a printed copy* of which is hereto attached. The two first, as will be seen, relate to tracts in which, according to the evidences afforded by the existing wells, solid rock is not encountered in well-sinking; while the third deals with tracts in which the occurrence of such an obstacle is the rule. Having superintended the revenue survey of Bhávnagar from beginning to end, I believe I may claim to have sufficient experience of the division of Káthiáwár in which Gogha is situate to state that, in tracts dealt with by rule third, it is the exception to find underground springs; and that in them wells, in consequence of the operation being so expensive and water so uncertain, are never sunk without the aid and advice of professional water-diviners, who have been brought into existence by the exigencies of the case, and who, (I speak from many ocular demonstrations) considering their generally very ingnorant state, have a wonderful knack, acquired from close observations of nature, of discovering places, if there be any, where, if a boring deep enough were made through solid rock, an abundant spring of water would be tapped. These tracts in Gogha ought not to have been classed as having any water advantages at all; on the contrary, if a cultivator, who holds fields in them, were, under the pressure of having to pay subsoil water assessment, to try to sink a well, the chances would nearly all be in favour of his being hopelessly ruined. Another consideration is that, under the abandoned system, the water-rate on the third class of land, from the fact of Rs. 428 having to be distributed over an area of 2,702 acres, would have been an inappreciable amount; whereas, by Colonel Godfrey's table, it would be 8 annas per acre, which, in Bhekda and Mota Khokhra, would mean a substantial addition of 25 per cent. for a circumstance which it would be a misnomer to call an advantage. I would, therefore, strongly recommend that rule third be cancelled for all purposes.

* Appendix N.

46. If this recommendation is approved of by Government, the effect would be as shown in this statement:—

No.	Name of Village.	Occupied Area by Revision Survey.	Present Revenue.	Subsoil Water of the 1st and 2nd Class-		Deduct present Water Revenue.	Balance.	Percentage Increase.
				Area.	Assessment.			
		Acres.	Rs.	Acres.	Rs.	Rs.	Rs.	
1	Karera	1,856	1,527	840	465	114	351 Decrease.	23·
2	Mota Khokhra ...	538	463	117	57	137	80	...
3	Gogha	121	109	93	10	...	10 Decrease.	9·2
4	Bhekda	1,094	1,205	203	91	177	86	...
	Total ...	3,609	3,304	1,253	623	428	195	5·9

47. The Gogha percentage remains unchanged, because there is no land in it classable under rule third. Karera has come down from 41·5 to 23; and Mota Khokhra and Bhekda, which are situated in the hills, show a decrease, which should not be demurred to, as the average water-rate at present is about Rs. 4 per acre, which is decidedly a tax on improvements.

Extract paragraph 8 of the Ahmedabad Collector's Memorandum No. 1688, dated 13th June 1890, submitting remarks on the above correspondence.

8. *Paragraphs 37 to 48.*—The proposal made by Mr. Fernandez for assessing the subsoil water advantages are very equitable, and should be adopted, although as regards Mota Khokhra and Bhekda by the adoption of the proposal the assessment of the water advantages will be less than the water revenue derived under the existing settlement.

Extract paragraph 9 of the Survey Commissioner's letter No. 1423, dated 11th July 1890, submitting remarks on the above correspondence.

9. Mr. Fernandez deals with the question of taxation of subsoil water advantages in his paragraphs 40 to 47. The method of classing subsoil water advantages and assessing the capabilities of soils possessing that advantage sanctioned by Government Resolution No. 2282, dated 29th March 1890, applies specially to the alluvial formation of the greater part of Gujarát, where there is great depth of soil; and however deep it may be necessary to go to tap springs, no obstruction of a harder substance than "kankar" is occasionally met with; but where the substratum is rock, and hence great difficulty and uncertainty is experienced in tapping subsoil springs, it is obvious that the orders regarding subsoil water advantages cannot apply. In dealing with districts where such a substratum of rock was likely to be met with, the survey officers were directed to be guided by special rules drawn up for Jhálod and Dohad, a copy of which has been appended to Mr. Fernandez's report. His recommendation—that wherever tracts of land coming under class III, described in paragraph 10 of these rules, exist, they should be considered as having no subsoil water advantages—is only reasonable, and I recommend, therefore, that all such advantages recorded as existing in lands with a substratum of rock should be cancelled, and that they should not be assessed for subsoil water advantages. The result of the recommendation is given in paragraphs 46 and 47.

Extract paragraphs 3 to 7 of the Commissioner N. D's Memo. No. 2767, dated 25th July 1890, submitting remarks on the above correspondence.

3. The present maximum rates as compared with those proposed and the results are as follows:—

	Present.	Proposed.	Increase.
	Rs.	Rs.	
Gogha	3	3	63 per cent
Bhekda	2-8	3	21½ „
Mota Khokhra	2	2-6	2 „
Karera	2	2-6	41¼ „

Mr. Fernandez has very properly exempted land with rock between the soil and subsoil water from classification for that advantage. According to Colonel Godfrey's scale, 2,702 acres would have had a subsoil assessment of Rs. 1,243, and by abandoning Class III the subsoil area is reduced to 1,252 acres and the subsoil revenue to Rs. 623. The old well revenue gave an income of Rs. 428.

4. The Commissioner cannot help observing that although in fixing the maximum rates and grouping a good deal of latitude has always been allowed, so as to prevent any undue excess, still the present report illustrates the inconvenience caused by tying the Settlement Officer's hands to fixed maximum increases, and he is afraid it will some day lead to what might almost be described as "fudging". Colonel Godfrey's fixed subsoil water-scale has first to be abandoned, as it alone would make an increase of 41·5 per cent. in one village, which shows that it is too high. Then the Settlement Officer considers that 20 per cent. advance in soil rates would be fair, which no doubt it is, the soil being poor; but he does not impose it on the principal village Gogha, because the classification already brings that up very high. It is contrary to elementary principles of grouping that the soil at Bhekda, some miles away, should pay the same as at Gogha, the market town. Finally, after adding a little dhekudiát revenue, the Deputy Superintendent brings out the results shown in the preceding paragraph, which give a combined increase of 29½ for the whole 4 villages. Mota Khokhra escapes with a 2 per cent. increase, as it has little land assessed to subsoil water, and will pay Re. 0-13-11 an acre. Karera will pay 41¼ per cent. increase and Re. 1-2-7 an acre, as it has much land assessed to subsoil water. The soil at Karera, however, is only slightly better than at Mota Khokhra, the classification value being Re. 0-6-1 against Re. 0-5-2.

5. These results cannot be considered very happy. Mr. Fernandez has worked them out with considerable labour; but, as he himself says in paragraph

42, if the soil *plus* subsoil rates exceed the fixed maximum for a holding, the surplus must be remitted.

6. The Commissioner would therefore recommend that the anna scale sanctioned by Government in Appendix E to Government Resolution No. 2282 of 29th March 1890 be considered only tentative, and that in future the Superintendents of Survey be at liberty to vary them as circumstances dictate. In the case of Gogha the average classification value of the soil is under 8 annas, and yet a fixed sum of 8 annas per acre is taken from occupancies, for the problematical advantage of having water under their fields. If carried out rigidly, Mr. Fernandez shows how disastrous the results would be.

7. The Commissioner is aware that this proposal will be a deviation from principle—that, in strict theory, the wealthy owner of sugarcane in Broach should pay no more for his 10 feet well than the cultivator of Karera, who possesses no well, but might perhaps have one for digging it if his crop of bájri or jowári needed watering (*vide* Colonel Godfrey's letter No. 118 of 6th January 1890, para. 41). And the Commissioner may be twitted with himself advocating "fudging". But the Commissioner feels satisfied that the general imposition of what is on bad soils a *heavy* water tax—the same whether a field is barren moorum or rich black soil— deserves reconsideration. If necessary, Colonel Godfrey's scale might be reduced all round, and the maximum soil rates increased where necessary, so as to make valuable land pay its quota. But the Commissioner would suggest that the most practical way is to allow the Survey Superintendent the same latitude in manipulating subsoil water assessment as in regulating soil assessment. The Commissioner feels very reluctant to raise a question which has already been decided upon; but Colonel Godfrey's rates were, after all, only experimental, and the Commissioner would represent that if experience shows them not to work well, there is no reason why they should not be altered.

Extract paragraphs 2 to 4 of the Survey Commissioner's letter No. 51, dated 8th January 1891, submitting remarks on the Revision Settlement of the Gogha Táluka.

"2. The proposals for the Revision Settlement of four villages of the Gogha Táluka of the Ahmedabad Collectorate were reviewed during my absence on leave by the Acting Survey Commissioner Colonel Godfrey in his No. 1423 of 11th July 1890. I had nothing to say to the preparation of this settlement, but I have lately had an opportunity of personally consulting the local Deputy Superintendent, Mr. T. R. Fernandez, and I am satisfied that his proposals are generally suitable and may be accepted.

3. The chief difficulty in the settlement of these villages arises from the application of the fixed subsoil water scale proposed by Colonel Godfrey, when Acting Survey Commissioner, and sanctioned under Government Resolution No. 2282, dated 29th March 1890. This "new departure" was made during my absence on leave, and I must confess I never had any confidence in the durability of the arrangement. Indeed, I distinctly foresaw the embarrassments into which a fixed scale was certain to lead us. The arrangements originally made by Mr. Bulkley and myself were set aside primarily, because a difference of six pies existed in the maximum for subsoil water addition recommended for Dholka Táluka and that for Daskroi, and this difference did not appear to be satisfactorily accounted for. In straining at this gnat we are faced the necessity of swallowing camels such as are foreshadowed in this settlement where in one village the application of the fixed scale alone causes an enhancement of 43.5 per cent. I quite agree therefore with Mr. James (para. 7) that the most practical way is to allow the Superintendent of Survey the same latitude in manipulating subsoil water assessment as in regulating soil assessment." One fixed scale for all tálukás will never do if it is to be followed, as must be the case by cutting and clipping rates here and there, and if Colonel Godfrey's scale is declared to be purely experimental and to be followed in principle only as each locality is settled, the object of Government will be sufficiently attained.

4. When the next Gujarát Táluka comes on for revision, I hope to be in a position more clearly to illustrate my views on this subject. In the meantime

for these four scattered villages, although I could not recommend such special treatment in future settlements, I think that Mr. Fernandez's expedients for tempering the weight of the increases in certain cases are judicious and may be adopted. The use of the Jhalod rules in preference to those adopted in the case of the alluvial districts of Gujarát was a right move in the first instance and under the circumstances the exemption from subsoil assessment of lands with rock underlying is a wise measure."

No. 1843 of 1891.

REVENUE DEPARTMENT.

Bombay Castle, 12th March 1891.

To

THE SURVEY AND SETTLEMENT COMMISSIONER.

SIR,

With reference to the correspondence ending with your letter No. 230, dated 9th ultimo, regarding proposals for the introduction of revision settlement into the Gogha Táluka of the Ahmedabad District, I am directed to state that as the question of subsoil water assessment raised by the Commissioner, Northern Division, in his Memorandum No. 2767, dated 25th July 1890, requires to be carefully dealt with, and as the increase of revenue at stake is comparatively unimportant, His Excellency the Governor in Council is of opinion that the introduction of revised rates into the Gogha Táluka should be deferred until proposals for the resettlement of the next Gujarát Táluka are submitted. Meanwhile matters should be put in train for obtaining a full discussion of the questions raised in the memorandum from the Commissioner, Northern Division, quoted above.

I have, &c.,
G. VIDAL,
Acting Chief Secretary to Government.

Extract paragraphs 52 to 54 and 57 of the Deputy Superintendent Gujarát Survey's Report No. 173, dated 9th March 1891, submitting proposals for the Revision Survey Settlement of the Sánand Táluka.

52. With regard to subsoil water assessment, it seems to me, that under the peculiar circumstances of the táluka, and with the surrounding tálukas, revised according to the old system of subsoil water assessment, the soil rates ought to be our chief consideration and the subsoil water secondary only. Thus, the latter should only be used to supplement the former, where the assessment according to the former falls short of the limit prescribed either by the Land Revenue Act or by prudence based on the circumstances of the village. The remainder of the subsoil water assessment, if any, to be foregone for the period of the new lease. I confidently recommend this procedure, not only because Government have already sanctioned it in the cases of Kaela and Shápur of Táluka Viramgám, but because it appears to me in the case of Sánand to be the soundest course to follow. It is only for form's sake therefore that I state here that, the amount of the old water-rates for well lands, which we now relinquish owing to the new policy of not taxing improvements effected by the cultivators, is about Rs. 4,315·8; and that the subsoil water assessment, according to the newly sanctioned scale, amounts to Rs. 7,973·2.

53. I would again respectfully refer to the opinion I expressed in my settlement report of Táluka Viramgám, regarding the cancelling of assessment of subsoil water of the 4th order, in connection with jiráyat lands. During the year that has passed since the submission of that report, I have had several opportunities of judging of the effect of almost briny water, which is the characteristic of water of the 4th order, on jiráyat land, nearly every one of which has strengthened that opinion. I think it may safely be said that, no prudent landlord would do anything to compel, or encourage his tenants, to apply such water to his land, with deterioration of that land following such an application

as a certainty ; and, it is needless to add, that, taxing the use of briny water is in effect, compelling the rayat to use it. That the quality of the water I allude to is briny will be evident from its description in our rules. They say that water that is drinkable brackish is to be classed in the 2nd order, of subsoil water; undrinkable brackish, in the third; and water of a still lower grade of saltiness in the fourth. There is no cultivator but will admit, with only rare exceptions, the highly injurious character of the 4th order of water for jiráyat lands; and I respectfully beg to think that, the efforts of Government as a landlord should be not to encourage but discourage its use. The argument that, the cultivators do sometimes use it, should, it appears to me, be used rather as an argument for repression than encouragement of the practice. The rare exceptions I have mentioned are of wells, near some villages, having their water charged with phosphates and salts of ammonia, due to rain water percolating through the soil of the village site and carrying them down. These salts and phosphates are of course well known manure, and the water charged with them suits tobacco in a very high degree. Such wells, which are very rare indeed, can be treated exceptionally if it is decided to ignore water of the 4th order for assessing purpose when found in jíráyat lands. In the event of my being misunderstood, I will repeat what I said in my Viramgám report that, subsoil water of the 4th order should bo assessed for rice lands, not only because rice grows best in somewhat salty soil, but that the accumulation of sweet water in the rice beds, and the beds being occasionally washed over by rain floods, correct any injurious excess of saltiness in the soil. The area adjuged to have subsoil water of the 4th order is 8,367 acres; but of this 1,963 acres are rice land, hence the extent of land that will be freed from having to pay subsoil water assessment, if Government approve of my recommendation, is 6,404 acres, the assessment of which amounts to Rs. 433.

54. For convenience of reference I embody in the report a statement (the general statement for the whole táluka will be found in Appendix O) for each group of villages showing the percentage increase or decrease in the revenue of each village as a result of the application (1) of the new soil rates alone, and (2) of the new soil and subsoil water rates combined. By this arrangement I hope to simplify the understanding of the recommendations I am about to make in regard to the villages whose increases, either individually or on the group, go beyond what the limitation rules prescribe.

Group I.

Number.	Name of Village.	Current Revenue.	Amount of increase due to		Percentage increase in reference to	
			Soil and Subsoil Water-rates combined.	Soil-rate alone.	Column 4.	Column 5.
1	2	3	4	5	6	7
		Rs. a.	Rs. a.	Rs. a.		
1	Sánand	3,835 4	2,949 0	2,842 8	77	74¼
2	Sanáthal	3,986 4	1,784 12	1,071 4	44¾	26¾
3	Sarkhej	2,682 12	842 12	490 12	31½	18¼
4	Makarba	5,223 7	1,619 1	793 9	31	15¼
5	Bodakdeo	2,300 12	585 4	311 12	25½	13½
6	Thaltej	2,833 4	1,234 12	884 12	43½	39¼
7	Sola	2,484 0	1,495 0	963 8	60¼	38¾
8	Bhádaj	2,806 12	1,243 12	1,024 4	44¼	36¼
9	Hebatpur	1,072 8	337 0	211 8	31½	19¾
10	Silaj	2,811 8	1,680 0	1,245 0	59¾	44¼
11	Ámbli	1,603 0	973 8	761 0	60¾	47½
12	Bopal	1,449 8	1,089 8	854 8	75¼	59
13	Ghuma	2,140 4	1,215 0	1,151 12	56¾	53¾
14	Manipur	401 0	117 8	93 8	29¼	23¼
	Total ...	37,230 3	17,166 13	12,699 9	46	34¼

The increases in two of the villages, *viz.*, Sánand and Bopal, are above the prescribed limit of 66 per cent. for individual villages; in the case of the former, even without the help of the subsoil water assessment. I therefore recommend that, in respect of Sánand, all increases above 60 per cent., and in respect of Bopal, all increases above 40 per cent., be foregone forthe period of the new lease. The great advantages which Sánand now enjoys, and which have been described in paragraph 48 of this report, I think justify us in taking an increased revenue from it nearly up to the full limit allowed by the Act. Bopal is a very good village; and if it had, at the original settlement, chanced to have been in Táluka Daskroi, instead of Táluka Dholka, its maximum soil-rate would, no doubt, have been Rs. 2-12, the same as that of Bodakdeo, instead of Rs. 2-4 as at present. For the same reason I propose the increases to be taken from the villages of Silaj, A'mbli and Ghuma should be 40 per cent. Of Sanáthal, the increase due to the new soil-rate alone is 26¾ per cent. I recommend that this figure be raised to 33 by the amount against it in column 5 being supplemented from the subsoil water assessment. It had belonged to Táluka Daskroi, consequently its present soil-rate is very much higher than that of Sánand Kasbo, therefore its proposed increase should be on a scale considerably smaller than that of the Kasbo. Villages Sarkhej, Makarba, Bodakdeo and Manipur should have their percentages in column 6 confirmed; while villages Thaltej, Sola, Bhádaj and Hebatpur, should have their percentages in cclumn 7 accepted for the new lease.

Group II.

Number.	Name of Village.	Current Revenue.	Amount of increase due to		Percentage increase in reference to	
			Soil and Sub-soil Water-rates combined.	Soil-rate alone.	Column 4.	Column 5.
1	2	3	4	5	6	7
		Rs. a.	Rs. a.	Rs. a.		
1	Piplon	774 12	380 12	326 12	49¼	42¼
2	Devti Náni	574 4	497 12	474 4	86¾	82¾
3	Mátoda	1,819 4	992 12	831 4	54½	45½
4	Vásna Chácharvádi ...	2,619 0	1,752 8	1,602 8	67	61¼
5	Bhát	4,000 8	2,316 0	1,847 0	58	46¼
6	Kásandra	3,951 4	661 0	589 4	16¾	15
7	Tájpur	728 8	477 4	435 4	65½	59¾
8	Chángodar	1,222 12	555 12	459 12	45½	37½
9	Navápura	1,217 0	360 4	91 12	29½	7½
10	Visálpur	4,970 12	500 12	220 12	10	4½
11	Bákrol	1,849 4	156 0	—84 0	8½	—4½
12	Vanjhár	2,577 0	—637 0	—872 0	—24¾	33¾
13	Bádrábád	350 0	17 12	—43 4	3¼	12¼
14	Fatevádi	3,023 6	651 2	338 2	21½	11¼
15	Bhávanpur	628 8	311 0	211 0	49½	33½
16	Andej	2,084 0	1,766 12	1,654 8	84¾	79½
	Total ...	32,642 6	10,760 6	8,082 14	33	24¾

The very high increases in villages Devti Náni and Andej are chiefly owing to their present rates being very low, they having belonged respectively to Tálukás Dholka and Viramgám: and, in a smaller measure, to the comparatively large extension of newly converted rice land in them. Their proximity to both Sánand town and railway station being taken into consideration, likewise the smallness of their present maximum rates, I propose to keep their increase at 45 per cent. Bhát, Vásna Chácharvádi and Matoda are all three prosperous villages.

As the soil of the first mentioned is in parts of a superior kind, and as it has, at the same time, the advantage of being swept over by a very high flood in the Sábarmati without the attendant danger to which the villages on the banks are exposed, I propose that its percentage increase should be the same as the figure entered against it in column 7, *viz.*, 46¼. The proposed increase of the other two villages should be 40 per cent. each. Tájpur is one of the poor villages of the táluka, occupied by a class of very thriftless Kolis. The greater half of the village has become a luxuriant bábul forest, and the area under cultivation is but poorly tilled. Caste assessment is, no doubt, to be deprecated, but, like all rules, this one also has its exceptions, by ignoring which a great deal of harm must result. I propose, therefore, to take an increase of only 20 per cent. from this village. The heavy decrease of 24¾ per cent. in Vanjhár, which results when the new subsoil water assessment is included, is due to a re-classification of the soil, and the abolition of the present high well assessment. This is one of the villages which was greatly damaged by the great flood of 1875. The present condition of its peasants, who are Kolis, is so extremely bad that, during the dry season, they eke out their existence by doing manual labour in Ahmedabad. The reduction of 24¾ per cent. on their present revenue demand should, therefore, in my opinion, not be grudged to them. The increases to be taken from the villages of Kásandra, Navápura, Visalpur, Bákrol, Bádrábád and Fatevádi should be according to the percentages shown against them in column 6, and those from Piplon, Chángodar and Bhávanpur according to the percentages in column 7.

Group III.

Number.	Name of Village.	Current year.	Amount of increase due to		Percentage increase in reference to	
			Soil and Sub-soil water-rates combined	Soil-rate alone.	Column 4.	Column 5.
1	2	3	4	5	6	7
		Rs. a.	Rs. a.	Rs. a.		
1	Juda...	845 9	1,261 15	1,151 15	149¼	136¼
2	Juhár	3,684 0	1,856 10	1,856 6	50½	50½
3	Daran	2,378 0	1,105 4	1,007 4	46½	42¼
4	Vásna Dhedhál	2,110 14	258 2	188 6	12¼	8¾
5	Náranpur	788 4	455 0	455 0	57¾	57¾
6	Dodar	1,642 4	975 12	942 4	59½	57½
7	Sutárki	1,247 8	641 4	641 4	51½	51½
8	Khetásar	1,573 12	832 12	832 12	53	53
9	Chorvadodra	4,044 4	2,082 12	2,039 8	51½	50½
	Total ...	18,314 7	9,469 7	9,114 11	51¾	49¾

One of the two principal causes of the high increase noticeable in the village of Juda is the very large extension of the newly converted rice area, for while it covers 479 acres, the area of old kyári is only 105 acres, *i. e.*, the present area of rice cultivation shows an increase of 456 per cent. over that now assessed as rice. In Juhár the newly converted rice lands measure 622 acres, while the assessed rice area is 380 acres. Were it not that the exigencies of the limitation rules require a large reduction in the percentage increase of all the villages of this group but one, I would have recommended that the revenue demands from these two villages be raised in the case of Juda by 66 per cent., and in that of Juhár by 50½ per cent. But under the circumstances, I propose that the increased levy of each should be 40 per cent. over the present revenue realizations. Of the remaining 7 villages, I would recommend confirming the percentage figure of Vásna Dhedhál, as stated in column 6, and reducing the percentages of all the others to 30 per cent.

Group IV.

Number.	Name of Village.	Current Revenue.	Amount of increase due to		Percentage increase in reference to	
			Soil and Sub-soil water-rates combined	Soil-rate alone.	Column 4.	Column 5.
1	2	3	4	5	6	7
		Rs. a.	Rs. a.	Rs. a.		
1	Siávada	3,157 4	733 6	733 6	23¼	23¼
2	Jholápur	5,715 8	1,195 12	1,171 4	21	20½
3	Daduka	2,955 12	1,009 12	892 4	34¼	30¼
4	Rethal	3,798 8	978 0	843 0	25¾	22¼
	Total ...	15,627 0	3,916 14	3,639 14	25	23¼

The percentages shown against all the villages in column 6 being reasonable, I recommend their being confirmed, especially as on the whole group the average increase produced by the new rates will be only 25 per cent. In this group 1,035 acres of jiráyat land have subsoil water of the 4th order. If Government decree either the postponement of the levy, or the abolition, of the assessment on water of the 4th order for jiráyat, there will be but a slight diminution in the average increase noted above, Daduka getting nearly the whole of the benefit.

Group V.

Number.	Name of Village.	Current Revenue.	Amount of increase due to		Percentage increase in reference to	
			Soil and Sub-soil water-rates combined	Soil-rate alone.	Column 4.	Column 5.
1	2	3	4	5	6	7
		Rs. a.	Rs. a.	Rs. a.		
1	Upardal	1,836 0	53 4	27 8	3	1½
2	Vanália	1,076 0	329 12	271 8	30¾	25¼
3	Aniáli	738 4	99 6	95 12	13½	13
4	Jhámp	2,474 12	—174½ 12	—283 12	—7	—11½
	Total ...	6,115 0	307 10	111 0	5	1¾

The application of the new rate produces a decrease of 7 per cent. with, and 11½ per cent. without, the subsoil water assessment in Jhámp, and an increase of only 3 per cent. and 1½ per cent. with and without the same, in Upardal. The reclassification of the rice lands of these villages shows that they need relief from their present burden; hence I recommend that the percentages shown against them in column 6 be confirmed, with the proviso that, the subsoil water assessment of the 4th order of both of them for jiráyat land be either cancelled or suspended during the currency of the new lease. As regards Vanália and Aniáli, I recommend for adoption the percentages of increase shown in column 6, with the same proviso as that made in the case of Jhámp and Upardal.

57. The suggestions and recommendations made in the preceding paragraphs show the following tabulated results, four of which are well within the limits prescribed by the Land Revenue Act and the fifth, though transgressing one of them, the extra increase is so slight as to be easily made to disappear in the final calculations :—

Class.	Number of Villages.	Maximum dry-crop race.	Government Occupied Land.				Percentage Increase.
			By former Survey.		By Revision Survey.		
			Area.	Assessment.	Area.	Assessment.	
			A. g.	Rs. a. p.	A. g.	Rs. a. p.	
I	14	3 4	16,540 22	37,230 3 0	16,598 15	50,342 4 0	35¼
II	16	2 12	14,340 30	32,642 6 0	14,370 1	40,345 0 0	23½
III	9	2 4	14,309 34	18,314 7 0	14,320 2	23,890 8 0	30½
IV	4	2 0	11,149 26	15,627 0 0	11,161 12	19,543 14 0	25
V	4	1 8	4,288 31	6,115 0 0	4,103 35	6,422 10 0	5
		Total .	60,629 23	1,09,929 0 0	60,553 25	1,40,544 4 0	27¾

The assessment of subsoil water of the 4th order in regard to jiráyat land for the whole táluka is Rs. 433. The total proposed assessment of the whole táluka will become less by a sum somewhat smaller than this amount, in the event of Government ordering the suspension of the levy of the 4th class water-rates during the currency of the new lease, as in the case of Táluka Viramgám, or its total cancellation.

Extract paragraph 5 of the Ahmedabad Collector's letter No. 1038, dated 21st March 1891, submitting remarks on the above correspondence.

5. I agree with Mr. Fernandez in hoping that no charge will be made for subsoil water of the 4th order. The loss on this will be only Rs. 433.

Extract paragraphs 3 and 9 to 21 of the Survey and Settlement Commissioner's report No. 763, dated 27th April 1891, submitting remarks on the above correspondence.

3. The correspondence on the original settlement has been printed in the Revision Settlement Reports of Dholka (1888), Daskroi (1889) and Viramgám (1890). These reports, moreover, contain decisions which must guide that of Sánand both with respect to the enhancement justified by the rise in prices as compared with the prices on which the original settlements were based, and also with respect to the treatment of old and new rice land, bhata and dhekudiat land. The only subordinate question which is still for decision is the assessment for subsoil water command in lieu of direct well taxation. That question I propose to deal with in my remarks, though it is very probable that Government will decide not to delay its orders on the Sánand proposals in order to consider a point, which is not of prime importance in Sánand, and certainly not important enough to delay the introduction of the revised rates.

9. I shall now refer to the special feature of this report.

The Gogha re-settlement awaits introduction pending consideration by Government on the proposals for the next Gujarát Táluka, which is Sánand. The question at issue is the assessment for subsoil water command. When the Daskroi report was submitted, the principles initiated in Jhálod, and adopted with more or less modification in Dholka and Daskroi, were questioned, and, after a detailed report from Colonel Godfrey, were declared to be in some respects unsound. Colonel Godfrey's innovations were approved. The amended method was applied to Viramgám and the results were sufficiently satisfactory to secure sanction. It was confidently hoped that the new scale would be found applicable to the remaining tálukás of Gujarát. In the Gogha re-settlement, however, it did not assert its claim to universal applicability with conspicuous success. The Commissioner, N. D., urged that the results were such as to demand that the scale should be submitted to further test and that it should be considered only tentative, authority being given to the Superintendent to modify the valuation scale according to the special circumstances of each táluka. Government was pleased to permit the whole question to be reopened.

10. I desire to show—

First, that there is no necessary agreement between the revenue obtainable by assessment of subsoil water command and that now obtained by direct well taxation.

Secondly, that by the principles and precedents of the survey the natural advantage accruing from the presence of easily available and beneficial water in the subsoil should be dealt with in classification, should affect the relative valuation, and should vary in amount with the maximum soil-rate.

Thirdly, that it is impossible to lay down a scale applicable to all Gujarát and, therefore, that the fullest discretion should be allowed to the Superintendent to modify the valuation scale according to the special conditions found in each táluka as advised by the Commissioner, N. D.

These points will be taken in order.

11. Up till the time of the Daskroi revision, with the full approval of Government, the pitch of the subsoil water assessment was regulated so as to recoup the loss resulting from the extinction of direct well taxation, but Government has now definitely ruled that "the equitable addition to the assessment on account of subsoil water command is not concerned with the extent to which in any tract the facilities at hand are utilized." Theoretically this ruling cannot be contested, but there must be some condition imposed to ensure that moderation in the rating for subsoil water advantage which Government has declared to be an essential to the success of the system. When the abolition of direct well taxation was discussed at the time of the later original settlements of Gujarát, a fear was continually present that it would entail a sacrifice of revenue and it became an accepted principle that this sacrifice should be avoided. When the substituted system was brought into use at the revision settlements, it was soon seen that the opposite result was more likely and a comparison was always made between the revenue resigned and that substituted in order chiefly to prove that moderation had guided the action of the Settlement Officers. With the experience now gained it is safe to neglect the comparison altogether as a guide. But other safeguards will be required lest by the attempt to banish for ever the inequalities, vexation, and check on improvement inseparable from all other known and tried means of assessing water advantages, too great prominence be given to what after all is one of the details of classification. The safeguard, I think, may be secured by relegating the subject to its proper place as a detail of classification.

12. This leads to the second point. I would respectfully urge that it is against the principles of the survey valuation to deal with an advantage which affects the productiveness of land otherwise than in classification. No one opposes the principle of varying the soil maximum rates according to the facilities for disposal of produce. The occupant of a field near a railway station for instance is reasonably called on to pay a much higher assessment than he would pay if the same field were in a distant village. The justification is simply this, that he can dispose of his crop at a greater advantage and that his net cash profit is proportionately greater. The natural advantage of irrigational facility is largely similar in its effect. The net result is a larger crop and the occupant with subsoil water command, if he uses it, secures an equal addition to his crop whether he be favourably or unfavourably situated with respect to market; but the net cash profit is very different. It varies with the facilities for disposal, and the rent charge on the addition ought, I think, clearly to vary with the net cash profit. This was not forgotten in the Dholka and Daskroi settlements, for the average incidence of the subsoil water charge was greater in Daskroi.

13. There is as strong proof also from analogy on the point at issue. The subsoil water command is after all only one of the "advantages" which operate to raise the classification value of land. Just as "faults" operate to lower the valuation so "advantages" raise it. To deal otherwise with subsoil water advantage would practically be to condemn the hitherto almost invariable practice. But I must show that the analogy holds; that the "subsoil water class" is similar in its nature to the "position class" or any other recognized advantage which affects classification.

14. The Joint Rules enumerated "faults" but omitted to prescribe opposite "advantages." It was however very soon found, as experience was gained, that in the interest of the relative valuation of soils it was just as necessary to recognize advantages as to allow deduction for "faults."

One of the earliest recognized "advantages" was the "alluvial" increase for which rules were laid down as early as 1855 at least. Under it lands enjoying the advantage of river flooding with the consequent deposit of valuable silt were subjected to an increase of one or more classes according to the estimate of the benefit accruing.

Another "increase" or "advantage" is the position class which has of recent years been largely brought into use in Khándesh and the Deccan with a view to improving the relative valuation of soils. In his Amalner report Mr. Stewart pointed out that "the Joint Rules do not sufficiently indicate the superiority one field possesses over another in regard to position for reception and retention of drainage from above." This position class will soon be brought into prominence in the Parántij resettlement proposals. There "bheja" lands, *i.e.*, lowlying lands, which from their position retain sufficient moisture to grow a second or even third crop after rice, will receive an increase for position which may be as high as four classes = 8 annas.

15. It may be urged that these increases are dissimilar from that due to subsoil water, but there is another advantage dealt with at classification of old standing called the "5 chain increase" or "*budki chad*" ordained to give a higher relative value to fields situated near streams affording facilities for the erection of "*budkis*" or water lifts. This "*chad*" or increase varies with the character of the soil; good soils are enhanced a whole class and poorer soils half a class, while still poorer soils are exempted. It seems to me evident that the subsoil water classification is an elaboration of this "*budki chad.*" In Gujarat "*budkis*" are called "*dhekudis.*" *Dhekudis* were at first assessed under a bag rate, *i.e.*, a charge per water bag used in lifting the water. But this was abandoned and an increase in classification was substituted on all lands adjudged capable of irrigation by "dhekudis" * It is true that this increase was not treated as a soil increase, but as a water rate varying under a special maximum and not the soil maximum. In this respect it is an exception from the rule which governs increases, but as it in character resembles the "*budki chad*" and as it was a substitute for a direct charge on dhekudis, it is the connecting link between the budki chad and the subsoil water rate which is a substitution for direct well taxation. The next step was the classification increase for "natural bágáyat" in certain tracts of Gujarát. In this classification whether the irrigational facilities were utilizable by means of wells or dhekudis, the increase was effected by the addition of "*guns*" or increases to the soil classification. The orders on the Jhálod report distinctly recognize the natural bágáyat classification as practically a subsoil water command rate. When in Jhálod the scale for the subsoil water class was drawn up, its kinship to the original five chain increase was evidenced by the strong differentiation made according to *distance from streams.* This differentiation disappeared in Dholka where the subsoil water rate was a soil increase on account of command of water. As in the case of the "budki chad" poor lands were wholly exempted and as in the case of "natural bágáyat" and "dhekudiat" the facility was the basis of the charge and not the actual use of the facility.

16. The objections to Colonel Godfrey's system are: (1) that it makes an equal charge in tracts with facilities for disposal of produce and those labouring under grave disadvantages in this respect; and (2) that it being a soil rate, based on facilities which enhance the natural capability of soils, is not governed by the principles which regulate soil maximum rates; and (3) that it is equal in its incidence on the poorest and the best soils.

In another respect it offends against the established principles of the survey land valuation in giving the subordinates of the department the authority to "fix assessments" when by the Joint Rules it was laid down as a cardinal principle that the agency could only be trusted to "fix relative values."

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* In Jhálod however the dhekudiat rate was t he soil maximum added as a water rate to the dry-crop assessment.

17. I think that the subsoil water classification should be viewed as necessitated by the conditions found so largely in Gujarát. Not only is it essential in the work of assigning correct relative values to various soils to make a difference between those having command of subsoil water and those without such command, but still more essential to differentiate between soils where the subsoil water is good and useful for irrigation and those where the water is of doubtful value or positively harmful. This latter differentiation was accentuated in the Dholka rules where it was directed that in cases where wells exist, but are never used for irrigation, owing to the effect of the water, the subsoil class should not be imposed. I think that the difference thus attainable in the absolute assessment is imperatively necessary, for otherwise the inhabitants of a tract where the water is not easily available would have just cause of complaint if they see, "natural bágáyat" classed only for soil; and in the same way the inhabitants of a tract of brackish, useless water would with justice complain if their treatment is precisely the same as that accorded to the cultivators of tracts with readily available sweet water.

18. The safeguard against excessive enhancement, as I have said, is to throw the responsibility on the Superintendent, because hard and fast rules for universal application have very early shown themselves unworkable. The Superintendent cannot lay down rules far ahead. He must study each tract as it comes up and must carry out in its spirit the policy of abolishing water taxation directly on wells and of giving due weight to the possession and the command of easily utilizable water. The Superintendent and the Commissioner have far greater and more extensive discretion in all other details of classification and I see no reason why their discretion should be hampered in this detail. I may instance the case of the water rates for rice land to fix which numerous considerations are weighed and yet the fullest discretion is necessarily entrusted to the Superintendent not only as regards the weight to be given to the various factors in classification but as regards fixing the maximum rates. In all cases the Superintendent and the Commissioner will be under the necessity of justifying their action to the satisfaction of the Revenue officers and of Government.

19. If the subject is thus relegated to its old position as a detail of classification, the opposition to it as being a covert means of enhancing the revenue will be disarmed. The principle laid down in Government Resolution No. 4313 of 14th June 1889 (Amalner Revision) with respect to the "position class" will apply, *i.e.*, if the application of the subsoil water class causes the enhancement of assessment to exceed the limits justified by rise in prices and progress during the currency of the lease, the remedy will be a lowering of maximum rates.

If in backward tracts it is found that the facilities are great and the utilization scant, the classification must nevertheless be made as perfect as possible, and here again the subsoil water class may operate to some extent as a means of modifying the maximum rates. If in any tract the subsoil water increase causes a too sudden though justifiable enhancement, the principle has been established that the classification should be confirmed, but that the excess should be remitted till the tract can be called upon to bear it.

20. The assessment for subsoil water has been applied to Sánand according to Colonel Godfrey's scale. The total area assessed for this advantage is nearly 33,000 acres. The incidence on the average is 3 annas 10 pies per acre assessed. Of the total, 2,073 acres are new rice and 6,255 old rice land. The rest is dry-crop, and what was formerly classed as garden (1,349 acres).

In Mr. Fernandez's group 1, consisting of the light soil villages in the north-east, nearly the whole area has been adjudged liable to the assessment. The incidence is 4 annas 9 pies in this group, or $11\frac{3}{4}$ per cent. increase on the current revenue. In group 2, also of light soil villages in the south-east chiefly and mostly close to the Sábarmati, nearly 80 per cent. has been assessed. In 11 out of the 16 villages the whole area has been adjudged assessable. The incidence is 3 annas 9 pies. The actual charge adds $8\frac{1}{4}$ per cent. to the present revenue.

In group 3 extreme north-west and south central villages where the soil is not so light, one village, Vasna Dedhal, has been wholly assessed; in two others, Daran and Juda, half the area is assessed. In others the area assessed is either nil or very small. The incidence is $2\frac{1}{2}$ annas nearly and the increase 2 per cent. In groups 4 and 5 two villages, Vanália and Jhámp, have been wholly assessed. In three, Daduka, Rethal and Upardhal, the area assessed is under one-third. In the others it is insignificant. These are black soil villages near the Nal where there is no garden land and where water from wells is, as in group 3 also, only used to irrigate rice seed beds and rice crops. The incidence is 1 anna 9 pies and the increase due to the assessment $1\frac{3}{4}$ per cent. in group 4 and $3\frac{1}{4}$ per cent. in group 5.

If the Dholka scale had been applied the result would have been approximately as follows compared with the results of the Viramgám scale :—

Group.	Viramgám.	Dholka.
No. 1	4,468	3,715
No. 2	2,678	2,157
No. 3	354	215
No. 4	277	169
No. 5	196	114
	7,973	6,370

The Dholka scale would have given approximately an incidence of 3 annas 1 pie per acre and an increase of just under 6 per cent. as compared with the increase of just over 7 per cent. as proposed. The difference is not great. The general facts disclosed by the assessment are these: in group 1 the water of the subsoil, as judged by all evidences available, is sweet or very slightly brackish, and mostly found at a depth not greater than 20 feet. The same remarks apply to group 2, as regards the depth of the water bearing strata, but the character of the water is slightly inferior. In the other groups the water is chiefly found even nearer to the surface, but it is seldom sweet and is to a great extent so brackish as to be only useful for rice and for occasional crops of barley and wheat.

This analysis may be illustrated by the general remark in the Gazetteer that the water of Sánand is good.

21. In spite of the remarks which I have made with respect to the objectionable features of Colonel Godfrey's scale, I think Government will agree that the differences which would result at this stage by applying the Dholka or Daskroi scale are not great enough to make it worth the cost and labour of making any modification. The results are fairly satisfactory. The scale has been sanctioned for Viramgám and was drawn up with immediate reference to the conditions found in Viramgám and Daskroi. But there is one point for special decision, and that is the applicability of the fourth order of water to dry-crop lands. In his 53rd paragraph Mr. Fernandez has stated the case very fully and very fairly. It is certain that water of this class is not used for dry-crop cultivation in Sánand. There is no garden in the villages of groups 3 to 5. Wells are chiefly useful for rice seedlings when, as is frequently the case, the early rains do not suffice to grow them without the help of irrigation. If the seedlings are all not ready in time the whole rice area must lie fallow unless a rabi crop of wheat or barley can be raised. Thus poor brackish water is often of great value to rice and its command is fairly assessable. I think that Mr. Fernandez has fully met Colonel Godfrey's criticisms in the Viramgám report on this subject. The Collector supports the proposal to strike out assessments under the fourth order of water in all but rice land and I fully concur. I trust that the exemption will not be merely for the term of the coming lease but permanent, because the advantage is not substantiated.

Extract paragraphs 9, 11 and 12 of the Commissioner, Northern Division's Memorandum No. 1659, dated 5th May 1891, submitting remarks on the above correspondence.

9. As regards the assessment of subsoil water, the Deputy Superintendent as followed the scale laid down by Colonel Godfrey, but the present Survey

Commissioner has opened up the whole question as to how the assessment should be settled. I do not propose to follow Mr. Ozanne through his argument which appears to be that subsoil water should be reckoned as an advantage to be included in the classification of land. Mr. Ozanne acknowledges that the settlement of the general question will not affect to any great degree the particular case of the Sánand Táluka. Mr. Ozanne agrees however that the assessment for subsoil water of the 4th order should be foregone.

11. The main points for decision therefore seem to be:—

1. Whether the Deputy Superintendent's proposals should be accepted as they stand.

2. Whether the rates should be introduced provisionally, being liable to alteration on receipt of a supplementary report from the Survey Commissioner.

3. Whether there is to be any new departure with regard to the assessment of subsoil water.

Personally I would prefer to defer the introduction of the revised rates for a year rather than introduce them provisionally, and then alter them; but the exigencies of revenue have to be considered on the one hand, and the arguments of the Survey Commissioner on the other. My knowledge of the subject is not sufficient for me to express a very decided opinion on the subject. If the rates are to be introduced before the close of the revenue year, it will be necessary to extend the time for accepting resignations till 31st July, as proposed by the Survey Commissioner. Early orders for the introduction of the rates will also be necessary.

12. The question of the assessment of subsoil water may be left for future consideration, as its decision will have no great practical effect on the Sánand Táluka.

Extract paragraphs 1 and 3 of Government Resolution No. 3893, dated 8th June 1891, passing orders on the above correspondence.

Resolution.—His Excellency the Governor in Council regrets that he is unable to sanction the proposals submitted for the introduction of a revised settlement in Sánand during the current year. They have in his opinion received hardly sufficient consideration by the local officers on several points, and more especially in the matter of the assessment of subsoil water advantages.

3. The Governor in Council is unable to accept Mr. Ozanne's proposals about the subsoil water question without further consideration and discussion. Whatever may be their merits they are opposed to the decision of Government in their Resolution No. 2282, dated 29th March 1890, and they must be subjected to further criticism and examination before they can be adopted, especially as they are intended for general application. Extract paragraphs 9—19 of Mr. Ozanne's report should be forwarded to Mr. Fernandez, the Deputy Superintendent of Survey, for his remarks, especially on technical details. He should submit his report through Messrs. Younghusband and Ozanne, and the late Commissioner, N. D., Mr. James, each of whom may be requested to note on the proposals by the light of Mr. Fernandez's technical criticism. The Governor in Council will be glad if Mr. James will favour him with his opinion on the proposals as a whole as well as on the subsoil water question.

No. 371 of 1891.

From

T. R. FERNANDEZ, Esq.,

Deputy Superintendent, Gujarát Revenue Survey;

To

The SURVEY and SETTLEMENT COMMISSIONER.

Surat, 20th June 1891.

Sir,

With reference to para. 3 of Government Resolution No. 3893, dated 8th instant, directing me to offer my remarks on extract paras. 9 to 19 of your

Sánand Report, I have the honour to state that, as you are aware, up to the time when the introduction of the revision settlements began, subsoil water was only taxed when it was utilized for agricultural purposes, but the legislature, through the Land Revenue Code, having ordained that all improvements in agricultural lands executed with private capital should not be assessed, a system of subsoil water classification and assessment had to be devised not only to recoup Government for the loss they must suffer from the relinquishment of well assessment, but for another and an equally important reason, that of assessing lands according to their natural fertility and to other advantages possessed by them of which the possession of sweet subsoil water at command is the greatest. This question has been a most difficult one to deal with, because we are confronted by a variety of reasons of great importance, which, under an old established order of things, render the arriving at a theoretically correct solution an impossibility. I say impossibility advisedly and for these reasons:—Firstly, our soil maximum rates vary so remarkably, viz., from Re. 0-12 to Rs. 7; secondly, the very wide difference that exists between the natural aptitudes of our agricultural classes, to wit the Bhatela Bráhmin and the Kanbi on the one side, and the Chunvali Koli and the Bhil on the other; thirdly, the wide divergence that there is, in advantages of situation, for instance, the difference between the situation of the tálukas along the main line of railways such as Nadiad, Broach, Jalálpor, &c., and those far from it, such as Paráutij, Dohad, Mándvi, &c.; fourthly, the differences in the strength and volume of the under-ground springs, many wells getting exhausted in a few hours, while others may be worked night and day for several months without showing signs of depletion; and, fifthly, the lines drawn by prudence beyond which the assessment must not be raised at any one time. To fully meet these formidable considerations, how can we devise a fixed scale, which shall be inflexible, and yet satisfy us in its application to one and all of them? Indeed, for such a scale to work without producing grave results, we must not only begin from the very beginning, by making the soil and water rates dovetail into one another at all cost, but we must also possess the power to smooth away natural difficulties by the conversion of the Bhil into as intelligent and industrious an agriculturist as the Kanbi, &c. Unless we can do this, it seems to me that none but a scale that will bend and give will suit us. Now Colonel Godfrey's scale, although it has been whittled down to its low state by making allowance for the considerations mentioned by that officer in para. 46 of his letter No. 118, dated 15th January 1890, to the address of the Secretary to Government, is still, as ruled by Government, an inflexible scale; hence all our troubles. Its inapplicability in the two or three instances in which it has been used has become only mildly revealed. Let me here give cases which show its total unfitness. The villages named are in Táluka Paráutij which is to come on for revision next working season:—

No.	Name of village.	Bheja area under Cultivation.	Revenue.	Number of wells.	Well assessment.	Assessment according to Colonel Godfrey's scale.	Percentage increase on column 6.	Percentage increase on column 4.
1	2	3	4	5	6	7	8	9
		Acres.	Rs.		Rs.	Rs.		
1	Jhenjuna ...	1,096	1,658	...	7	959	13,700	58
2	Vadhrota ...	414	706	...	7	362	5,171	51
3	Dalpur	266	359	1	3	233	7,767	65
4	Poglu	506	723	1	9	443	4,922	61
5	Memadpur ...	79	94	...	...	69	...	73
6	Ambávadi ...	388	697	1	...	339	...	49
7	Salol	256	431	1	8	224	2,800	52
8	Palachar ...	602	948	5	37	527	1,414	55
9	Rasulpur ...	106	173	4	38	93	245	54
10	Nananpur ...	731	1,205	1	7	640	9,143	53
11	Vadrád	657	1,027	7	24	575	2,347	56
12	Sonasan ...	1,178	2,302	8	67	1,030	1,537	45

The figures in column 7 are estimates, but the actual figures are not likely to be much lower, if at all. The conditions in the Bheja lands of these villages (which alone are shown in the statement) are these:—Water at a depth of from 6 to 14 feet; number of wells in each tract from 0 to 8; and maximum rates from Re. 1-8 to Rs. 2-0, the average subsoil water rate according to Colonel Godfrey's scale being 14 annas. In Modása, the Petha Mahál of Paránţij, sweet water is nearly everywhere obtainable at a depth of 12 to 40 feet. The springs however, are very peculiar, because all over the country the difference in their levels in October and February extends from 4 feet to 10 feet and their force is so weak that in very few instances, indeed, can wells be worked all through a working day of nine hours. The soil maximum rates range from Re. 1 to Re. 1-12, and as the originally taxed wells are few in number, the result of the application of Colonel Godfrey's scale will be quite as starting as in the case of Paránţij stated above.

2. What should be done then to solve the difficult problem? I think the answer lies in the mode of treatment adopted in the analogous case of the assessment of lands. What does the Settlement Officer do when he has been given a Táluka to settle on the survey principles? He studies its past revenue history for a long series of years as regards the revenue realized, the amounts of remission granted and the nature of the rainfall. He then qualifies the conclusion which he derives from those points by the condition and intelligence of the cultivators, the position of the táluka in respect of lines of trade, &c. Having done this, he fixes approximately the amount of the future revenue he would take, and deduces therefrom the maximum rates. At this stage he spreads the burden of the future assessment on the survey numbers proportionately to their fertility with the aid of their classification values. It was by this procedure that the Settlement Officer fixed the maximum rates of the original settlements at from 12 annas to Rs. 7 for the different tálukás of this province. That these settlements have been most successful, and have been the chief means of bringing the province to its present state of prosperity, are now acknowledged facts. Supposing that, instead of the above described rational procedure of working out the settlements, the settlement Officer had begun by constructing a fixed inflexible scale based on a perfect theory, and then appling it to each táluka as it came on for revision, what would have been the result? It is not difficult to say that it would have simply been disastrous. Why then should we think that an inflexible scale for the assessment of subsoil water for the whole of Gujarát is the best means of attaining our end? The principle which gave birth to it, and which is found in the query, What is the additional value given to land by the existence of subsoil water, is no doubt perfect; but is it wise to apply abstract theories to such complex questions as the assessment of subsoil water in which the human equation forms only one out of many important points which must be faced? It is a subject which even in a prairie country would present formidable difficulties, for we could never class the subsoil water so as to give us an accurate basis for the application of a perfect theory, as it would never pay to have test borings in every acre of land. If this is so, and I think nobody will gainsay it, then what must the difficulties be in a country like Gujarát occupied for several centuries, in which customs have had time to attain the position and dignity of laws, and vested interests have grown so strong that they cannot but be respected and provided for. We can speak from the brief experience we have had with Colonel Godfrey's scale that the difficulties are so insuperable that the sanction of the proposals for the revision settlement of two tálukás has been withheld and the whole subject of subsoil water assessment re-opened. The conviction has come that the scale is unworkable. In fact it is a veritable bed of Procrustes into which the Settlement Officer is expected to fit in somehow the whole of the Gujarát Tálukás in their turn; whether they are giants or dwarfs (in the matter of wealth)—a process which on the face of it seems impracticable.

3. It seems to me, therefore, that we have no alternative left but to fall back upon the system which Lord Reay's Government disapproved. This system was in its main features the very same that has succeeded so well in the treatment of soil assessments described in para. 2 above. It worked in this manner:—We first discovered what the past water revenue had been and the progress the country had made since the last settlement in the building of new wells. These data were then used with the help of others furnished by our

subsoil water classification, *viz.*, the extent of the several orders of the water and the various depths at which they are discoverable, to find out the rates by the application of which the new water revenue to be levied from all lands of a village possessing subsoil water advantages, can be obtained. It seems to me that this system has not only the merit of simplicity, but also that of always dealing with all the important features of a problem, which there is only one way to solve successfully and that the practical. This way may and will some time produce results which theoretically may be pronounced unsound, but when there are only two possible alternatives to select from, one, the upholding of an abstract theory, and the other, the peace and prosperity of a country, I think there can be no doubt as to which of the two should be discarded and which adopted.

4. As Government have desired me to offer my remarks on the views expressed by you, I have the honour to state that I consider the line of arguments adopted by you to show that "the subject should be relegated to its old position as a detail of classification" as exhaustive. The water classification of rice numbers is a far more difficult task than that of subsoil, and yet, if it is left, as it is, entirely to the judgment and experience of the Superintendent to deal with, it seems inconsistent that his hands should be tied in respect of a matter of detail of a simpler nature. The whole history of the revenue survey shows that the officers have always been alive to the interest of both the rayats and the Government. Although the servants of the latter, they have always dealt fairly by the former; nay, if necessary, I can point out instances in which they have strongly urged lenient treatment in order the better to advance the prosperity of the rayats. It may be said to their credit too that it was a survey officer who, nearly 30 years ago, while engaged in discussing the proper pitch of well assessment, said that assessing wells was unjust and that it must before long be doomed to extinction. In the matter of assesment of subsoil water I, therefore, respectfully think that our hands might well be left unfettered. If any further argument were necessary in support of this, I may point to the fact that although our arguments run on different lines yet in the end they arrive at the same conclusion.

5. Before concluding I would add that I have from the beginning consistently held opinions adverse to the applicability of the new theory. In support of this I would draw your attention to the letter on the subject I wrote before December 1889 and to paragraph 14 of my Viramgám Settlement Report in which I foretold the difficulties awaiting us in the future. And in the Gogha Report I intentionally showed the incidence of the new subsoil assessment in full detail to give an idea of the manner in which it worked. Mr. James was good enough to pronounce this effort of mine as laborious. But I think I may be allowed to claim the credit of bringing about a fuller consideration of the subject by the light which I strove to bring to bear on it.

I have the honour to be,
Sir,
Your most obedient Servant,
T. R. FERNANDEZ,
Deputy Superintendent, Revenue Survey, Gujarát.

[*Below Mr. Fernandez's No. 371, dated 14th June 1891.*]

I am respectfully of opinion that the principle underlying Colonel Godfrey's scale sanctioned in Government Resolution No. 2282, dated 29th March 1890, is both unsound in theory and calculated to prove inequitable in practice.

2. In para. 44 of his report No. 118, dated 15th January 1890, Colonel Godfrey, after describing the considerations which differentiate the assessments on soils of precisely similar character differently situated, goes on to say that "if these considerations were again made applicable to the water assessment also, it would amount to a double tax on position and advantages." Surely this reasoning is fallacious. Surely the factor of position and advantages is one which must be applied to each individual element of productiveness if we wish the resulting total assessment to be a measure of the cash value of the crop. It seems to me, in other words, to be a case of the simple old formula—

$$(a+b)x=ax+bx$$

where a is the soil rate, b the water rate, x the varying factor of position and advantages. It comes to the same thing whether we apply the factor x to the sum total of the rates which depend on the productiveness of soil and water together, or to each of these items separately. And if the latter process is preferred, it is surely a fallacious objection to raise that it amounts to the imposition of "a double tax."

3. But the fact that such an objection is capable of being put forward seems to me an additional argument in favour of what I am inclined on other grounds to consider the sound and logical proposal of the present Survey Commissioner, to "relegate the subject (of subsoil water assessment) to its proper place as a detail of classification."

4. I would, however, in the first place, endeavour to show by examples how the application of Colonel Godfrey's hard-and-fast scale of assessment appears to me not only theoretically unsound, but capable in practice of producing most inequitable results. To take the case put by Colonel Godfrey himself, of 16 annas soil which is assessed at Rs. 2 in one locality and at Rs. 6 in another. This is of course with reference to the dry-crop productiveness of two fields considered; and it means (speaking broadly, and leaving minor considerations out of account,) that while the two will produce precisely the same dry-crop, the net cash profit to the occupant will, owing to his nearness to the market and similar causes, be just three times as great in the second case as in the first. Now, suppose that each of these fields is found to possess precisely the same water advantages, which are of the first class. The assessment under Colonel Godfrey's scale will become Rs. 3 in the former case, and Rs. 7 in the latter. The conditions both of soil and of water being the same, the two fields will produce precisely the same irrigated crop, just as they produced the same dry-crop. But whereas in the former case the position and advantages of the second occupant were held to be three times as good as those of the first, in this case he is assessed as if they were only as 7 to 3. Assuredly the advantage in the case of the more valuable irrigated crop will not be less than in that of the inferior dry-crop.

5. But instead of considering the effect on 16 annas soils, let us take the case of a field with the very worst soil and in the most unfavourable locality, "on the margin of cultivation," assessed neither at Rs. 6 nor at Rs. 2, but at perhaps a few annas per acre. If there should happen to be water of the best quality underlying this field within a few feet of the surface, Colonel Godfrey's scale would, as I understand it, at once add a rupee per acre to the assessment. Without insisting too strongly on the argument that such a field would in all probability be in the hands of an occupant of the lowest class, with neither the capital nor the enterprise to make use of his potential water advantages, it seems to me sufficient to point out that this means raising the assessment at one stroke by several hundreds per cent. Is not this opposed to Colonel Godfrey's own condition (para. 38) that his scale is to " make an increase in the land assessment which would scarcely be perceptible "?

6. I agree, as I have said, in Mr. Ozanne's opinion that the question of subsoil water advantages should be dealt with as one of the ordinary details of classification, in the manner suggested by him. Whether, like soil classification, it is capable of being dealt with under a hard-and-fast scale, applicable to all cases, is a technical question on which I feel scarcely qualified to offer an opinion. I believe it is generally admitted that the rigidity of the system under which the classification of soils is carried out has advantages which far outweigh the possible disadvantages; and if it were possible to work into this a scale for subsoil water classification (a very different thing from a rigid scale of *assessment*), which could suitably be applied to all future revisions, it might be expected that the result would be no less advantageous. But no such scale has yet been devised, and it would perhaps be very difficult, if not impossible, to produce one. In the absence of such a scale for universal application, a scale which would have to be framed on wholly different lines from Colonel Godfrey's, I am in favour of leaving the matter in each case to the responsible discretion of the Superintendent, which would of course be subject to the usual checks.

A. D. YOUNGHUSBAND,
Acting Administrator, Rájpipla State.

Nándod, 15th July 1891.

B 1246—27

No. 927 of 1891.

From

W. M. FLETCHER, Esq.,

Superintendent, Deccan Revenue Survey;

To

THE SURVEY AND SETTLEMENT COMMISSIONER,

Poona.

Deccan Survey Superintendent's Office,
Poona, 17th July 1891.

Sir,

I have the honour to reply to your letter No. 1056 of the 12th ultimo, on the subject of subsoil water assessment in Gujarát, merely premising that as I have no experience of that district, my remarks will necessarily be confined to the general principles involved and to the technical methods of applying those principles to the assessment.

2. It has been admitted from the commencement of the discussion, and indeed from a much earlier period, that the existence of subsoil water is "an element of value in estimating the relative value of fields," and that it affects the "inherent quality of the field as a productive agent"; also that this element of value should be assessed by means of "a small increase to the soil rates of the land which possesses facilities for irrigation by wells," and "by slightly adding to the soil valuation of those lands in which it is believed that wells can be dug with fair ease and at moderate expense." I quote these passages from among many which occur in the correspondence merely because they state very clearly and concisely the basis from which we must proceed and also indicate in a more general way the method which should be adopted. The whole subject has been so exhaustively reviewed both by Government and by officers of high standing and experience that I need not do more than allude to such passages as call for reference.

Government Resolution No. 6015, July 25th, 1884, on revision settlement of Jhálod Táluka.

Survey Commissioner's letter No. 910, May 3rd, 1884, paras. 4 and 6, on Jhálod revision settlement.

3. The present phase of the question was reached in the Government Resolution which sanctioned the Acting Survey Commissioner's proposal of a new scale for general adoption, and as the method of dealing with the matter therein proposed appears to me to lose sight both of the principle and the general method of application which the whole discussion shows to be desired by Government, I will try to point out how in my humble opinion the matter may be put on a true footing.

Government Resolution No. 2282 of 29th March 1890.

Survey Commissioner's No. 118 15 January 1890.

4. In the first place it is plain that if we are to follow the principles which have been accepted in all Bombay settlements since the time of the joint report, any factor in "the relative value of fields" should be allowed for in the classification rate, to which is subsequently applied the maximum rate, *i.e.*, that which carries the factors of the relative value of villages, *viz.*, climate and communications. This is what was intended, and was in a way effected by Mr. Stewart's plan of applying the maximum rate of the group* to the subsoil addition given by his scales. Colonel Godfrey in his 44th para. of the same letter argues in favour of having a uniform rate for the subsoil water advantage throughout Gujarát, *unaffected* by the maximum rates of the different tálukás and groups; but it is surely not open to question that if the value of the additional produce obtainable by utilization of subsoil water is at A worth double what it is at B (owing to difference in communications, &c.), the assessment must vary accordingly; in short, that subsoil water must be treated like any other factor in the relative fertility of a field and be modified by the maximum rate of the group. Colonel Godfrey says that to apply the maximum rate of the group to the subsoil water classification as well as to the soil classifi-

*Or, to put it inversely as Colonel Godfrey does in the 34th para. of his letter above quoted:—"A sliding scale with a two-anna maximum rate to be applied to each rupee of assessment."

cation would be to assess twice over for the considerations of climate and communications, but I submit that to apply such considerations to certain factors of the fertility of a field and not to others is on the face of it inconsistent.

5. Colonel Godfrey goes on to propose his method for adoption, apparently under the belief that rigid disproportionate uniformity was what Government desired when they objected to similar subsoil water in adjacent villages of different tálukas being differently valued. It seems clear, however, that this was a misapprehension. What had struck Government as anomalous was the effect produced by different *scales* of valuation being adopted in two tálukas, merely because the old well revenue in one was less or more than in the other: in other words, the proportion of assessment to be taken from all land with subsoil water was being varied in order to fit in with an irrelevant circumstance, viz., the amount of assessment hitherto levied on land actually irrigated. It seems evident that any arrangement which would secure a constant proportion of assessment for subsoil water throughout similar tálukas would meet the objections of Government as formulated in Colonel Godfrey's 33rd paragraph.

6. It will, I think, be admitted that if the relative value of well-irrigated and dry-crop land be practically similar in two tálukas, the assessment on land with and land without subsoil water should be relatively the same in each, and no other consideration should be allowed to disturb the proportions of assessment borne by the two kinds of land; also, that if the same scale of additional annas for subsoil advantage be added to the soil classification rate in each táluka, the proportion of assessment on that account will be constant in all, notwithstanding the fact that the maximum rates will vary according to the respective advantages of communication in each group and táluka.

7. It may be here incidentally pointed out that if the subsoil water assessment be made, as Colonel Godfrey proposes, independent of the maximum rate of the group, the proportionate incidence of that assessment must vary in every group, and can never be constant; for instance, in a group whose maximum rate is Re. 1 the assessment on account of the highest quality of subsoil water will, by Colonel Godfrey's scale, be in the proportion of Re. 1 for each rupee of soil assessment, while if the maximum rate be Rs. 2 the subsoil assessment will at once fall to half that proportion, and so on: it will be seen from this, moreover, that the scale in its effect is not in accord with the axiom which Colonel Godfrey in previous paragraphs has laid down for its starting point, viz., that the value of irrigable land may be taken as double that of unirrigable.

In fields of 16-anna soil, that is, in inferior fields, this proportion would be higher.

8. There seems reason to think that the amount of revenue produced by the application of Colonel Godfrey's plan would in practice be found too heavy to be realised. Leaving out of the question for the moment the main objection to this plan, viz., that the relative incidence of the subsoil water assessment must under it vary in every group, I would not undertake to express the opinion that the assessment it would impose (even where its incidence would be heaviest, *i. e.*, where the maximum rate of the group was Re. 1 or less) would be out of proportion to the real value of the advantage assessed; but to raise by 50 per cent. or even double the assessment per acre by one operation on account of an advantage that is and may long remain unutilized, seems questionable policy, to say nothing of difficulties which would become evident when estimating the revised revenue of a táluka. One difficulty likely to arise is as follows :—Let us suppose that 20 per cent. has been the increase of revenue which, on consideration of all the circumstances, the Settlement Officer decides to be suitable in a táluka or group. If the addition for subsoil water has been included in the classification rate his task is simple; it is merely to fix whatever maximum rate will, when applied to the classer's *ákár* give the desired amount: but if the subsoil rate is to be, as under Colonel Godfrey's plan, independent of the maximum rate, it would be necessary first to deduct the amount which the scale is found to give from the figure which represents the 20 per cent. increase, and then ascertain what maximum rate must be applied to the classer's *ákár* to give the remainder of the 20 per cent. This so far is simple enough, but it may well happen that the subsoil water assessment is found to exceed the whole

increase which is to be made* ; and then the only alternative will be to make an arbitrary reduction, with the result that even the rigid uniformity which this scheme claims to give must be sacrificed, and the subsoil water assessment be allowed to degenerate into an arbitrary cess ; for in some groups the effect of the scale would be arbitrarily modified, in others it would remain intact.

*Note.—Difficulties like this, only less in degree, have already occurred—*vide* Sánand report.

9. But, it will be said, this plan has been tried and the scale as applied to Dholka, Daskroi and Viramgám proves itself suitable. A careful examination of the facts and figures, however, shows that this statement is premature, for on reference to Appendix F we find that the means did not exist for applying the scale accurately, and it is pointed out in a note that the assessment figures there given are only approximate. This it appears is because in the classers' books such data only had been recorded as were required for the former scales which, for instance, did not discriminate between depths less than 24 feet, all of which were shown under A of the former scales, while in Colonel Godfrey's scale (Appendix E) A is for 8 feet, B for 14, C for 20 feet, D for 30 feet, and so on. Thus in Appendix F the whole subsoil water area in the first two classes is, for want of detailed information, entered under D, and in the 3rd and 4th classes under C and D; but as the values in the scale descend rapidly for increase in depth, A giving 16 annas addition where D gives 6 annas, &c., there seems little doubt that this estimate of the effect of the new scale would be much exceeded if accurate data for its application were forthcoming. In Dholka, for instance, "water is obtainable in plenty at depths ranging from 10 to 30 feet" (*vide* Mr. Bulkley's settlement report, para. 18); so it would appear that most subsoil water land would fall under B and C of Colonel Godfrey's scale. In Daskroi, "in the south, water is found at the small depth of 12 or 14 feet" (*vide* Mr. Fernandez's report, para. 14). In Viramgám I observe that Mr. Fernandez in para. 14 of his report says that Colonel Godfrey's scale gives a water assessment of Rs. 5,044, though in Colonel Godfrey's Appendix F it had been estimated (on a somewhat larger area) to produce only Rs. 2,892, that is, the estimate was exceeded by 74 per cent.

Cf. para. 48 of Colonel Godfrey's letter No. 118 of 15th January 1890.

10. The only plan which in my opinion will meet the case is the simple one of having a scale of additional annas for subsoil water advantage to be added to the soil classification annas of the field, in the same way as additions are made for other special advantages, such as liability to fertilizing floods, or possibility of irrigation by bndki from a nála. The scale would be uniform throughout Gujarát and the assessment obtained by it would therefore bear the same proportion to the soil assessment in each táluka. (I say this believing that there are in Gujarát no very great differences of climatic moisture such as exist between the Eastern Deccan and the tálukas adjoining the Western Ghats; for where the difference in climatic moisture is so great as to materially alter the relative values of dry and irrigated land, a change in the scale might be necessary and suitable.)

11. The construction of the scale to be adopted is a question in which local experience is most necessary, and if I may venture an opinion it would be that the scale devised in the first instance for Dholka and sanctioned by Government in its Resolution No. 6342 of 6th August 1885 is preferable to any yet proposed (1) because being framed by Mr. Stewart and Mr. Bulkley it is the outcome of the best local experience, (2) because it seems to have been what those officers thought suitable on the merits of the case before they found themselves hampered by the question of whether the amount it would yield would exceed or fall short of the old well revenue. It will be seen that when this latter point came to be looked into the values in the scale were reduced by about 50 per cent. and thereby brought, as Mr. Stewart admitted, to so low a pitch as to border on absurdity. I think an addition of 4 annas to the soil classification annas, *i. e.*, an addition of 25 per cent. on 16 anna soil, seems suitable in the case of the best quality of subsoil water, but the gradations made in the scale for inferior degrees of the advantage will need in my opinion some change. I would suggest that they should be further differentiated so as to carry approximately the same proportion downwards through the soils of inferior value,

As the scale stands, for instance, the 4 annas addition, which is 25 per cent. to 16 annas, becomes 50 per cent. when applied to 8 annas; this might be easily arranged for.

12. It will be asked perhaps wherein does the plan proposed in para. 10 above differ from that framed by Mr. Stewart and carried out in Jhálod, Dholka and Daskroi. The main difference is that I propose one scale to be fixed on for application in all tálukás whose climates do not so differ as materially to affect the relative value of irrigated and dry-crop lands, thus ensuring a constant proportion between the soil assessment and the subsoil water assessment in all similar tálukás. So far as the addition made under the scale will be subject to the action of the maximum rate of the group there is no difference between the plan now proposed and Mr. Stewart's. Mr. Stewart merely showed the revenue obtained by his scales under a separate head in order to compare it readily with the old well revenue, but as it is now agreed that this comparison is not necessary the separation need not be insisted on; if at any time occasion should require it the detail figures would be obtainable from the classification books.

13. The drawing up of the scale to be adopted is a detail which might, I would submit, be left like others of a similar nature to the Survey Department; the principle that it should not vary except with great difference of climate, should be insisted on, and is one which will naturally claim attention now that the irrelevancy of the old well assessment as a governing factor has been recognised.

I have the honour to be,
Sir,
Your most obedient Servant,
W. M. FLETCHER,
Superintendent, Deccan Revenue Survey.

Extract paragraphs 1 to 14 of the memorandum from the Commissioner in Sind submitting remarks on the above.

MEMORANDUM.

The proper assessment of subsoil water was a subject in which His Excellency the late Governor of Bombay took great personal interest and Colonel Godfrey's scale was passed at a conference at which Mr. Propert, Colonel Godfrey, Mr. Fernandez and myself were present, including His Excellency Lord Reay himself.

2. The question has been so overlaid by technical verbiage that it is somewhat difficult to follow the various arguments. But the question at issue is the following. Government used to tax wells in Gujarát and made a revenue in some tálukás which I know of Rs. 20,000 a year, and I believe in parts of Broach the figure is even higher. Old permanent wells which generally watered very valuable gardens were taxed Rs. 10 to 20 each at the Settlement, and kacha wells, which in some parts of the country where water is close to the surface can be dug in the course of a day or two by a cultivator, were assessed at a small rate whenever dug and used. Government however came to the conclusion that this was not only contrary to the cardinal provision of the survey, viz., that improvements should not be taxed, but discouraged the use of water for irrigation, a matter of importance in a country where rainfall is more or less precarious. On the other hand, a cultivator possessing any natural advantages is bound to pay for it, and the Government determined therefore to assess, not the well, but the water-bearing facilities of the soil. The distinction is rather a fine one, for practically (in the absence of expensive borings in every field) only the presence of a well can determine a field's water-bearing facilities, and in Gujarát, as a matter of fact, while one cultivator has a fine sweet well in his field, the cultivator next door has very often nothing but salt water in his. Similarly, a sweet

well after lasting many years, may turn salt, or it may turn salt in a single season. And the non-taxing of wells while continuing to tax at special rates the rice fields which had been levelled and bunded at great expenditure by the people, was anomalous. However, in the pursuit of theoretical justice, and there can be no question that to encourage the use of water is distinctly a proper policy, Government said that wells, as such, should not be taxed. Recognizing, however, that payment for the use of water belonging to Government could not, in justice to the general taxpayers, be altogether remitted, they laid down that the water-bearing facilities of the soil should be taxed in addition to the assessment of the soil itself.

3. In Dholka, the first táluka of Ahmedabad which was treated in this way, the Survey officers made a rough examination of the land, measured the wells, assumed (which as a matter of fact was a wholly gratuitous and I have no doubt sometimes an erroneous assumption) that the presence of water at certain depths indicated a presence of similar water at the same depths in a certain area of the surrounding land, and put a small additional percentage on the soil on account of the fields thus held to possess water, varying this percentage according to the depth and sweetness of the water. In order to get at the standard of the percentage to be so fixed, they took the existing amount of well revenue, and chose rates from one to two annas in the rupee, which, when spread over all the water-bearing fields, worked out to about the sum total of the well revenue lost. In other words, they spread the existing well revenue over all that they considered to be water-bearing land. Instead of A paying Rs. 10 for a well and B and C in the adjoining fields, with no wells, paying nothing, A, B and C and all the cultivators in the neighbourhood had to pay an anna or two in the rupee extra all round. A was a great gainer and all the rest were small losers, save for the assurance that if they constructed wells like A, Government would charge nothing extra for them. The amount of water tax actually paid by each tract varied according to the depth and sweetness of the well, and these of course varied according to the time of year at which the well was examined by the classers, so that a well examined immediately after the rains would be the means of the rayats paying higher percentage on the surrounding fields than if the well had been examined late in the hot weather. No doubt the classers did their best to assess the wells accurately. But they could not possibly ascertain accurately the average depth of the well, the strength of the springs or the certainty of its remaining sweet, and accordingly they reduced every thing to a mere measurement and testing of the water at the time they found it.

4. The increase in the soil assessment in the Dholka Táluka was not very high, on an average a little under 3 annas in the rupee in water-bearing tracts, and Rs. 7,200 of subsoil water assessment was spread over a large area instead of a sum of Rs. 6,000, formerly paid by a few owners of wells. * When, however, Daskroi, a rich táluka, came under revision the amount of water-bearing country was found to be so large that a still smaller percentage on the soil assessment was needed than in Dholka to make up the well assessment remitted. In Dholka the maximum subsoil assessment proposed was at first 4 annas, but afterwards reduced to two annas in the rupee. In Daskroi it was only $1\frac{1}{2}$ annas and was estimated to produce Rs. 21,800 in lieu of a revenue of Rs. 19,000 from wells which was to be surrendered.

5. His Excellency Lord Reay, who took great personal interest in this question, at once noticed the faultiness of the percentage system. "Why," he said, "should A in Dholka, with a field assessed for soil at Rs. 4, pay 8 annas extra for the best subsoil water, while B in Daskroi with a similar field and similar water pays only 6 annas? Again, C with a guradu field in a Daskroi village pays Rs. 3 for the soil and therefore 3 + $1\frac{1}{2}$ = $4\frac{1}{2}$ annas for the water, while D in a sandy field next door pays Re. 1 for the soil and therefore only $1\frac{1}{2}$ annas per acre for the same water. Your working up to the amount of the well revenue lost leads you to do injustice. Can you not fix a scale for taxing subsoil water that will be fair to all? You allow for the difference in the soil

* I omit reference to the two tálukás in the Panch Maháls, where the question was of small importance, but in which the experiment was first tried.

in your classification of it. The *water* you should charge for as a water company would, so much for the best supply, so much for the second best, all should pay alike "

6. Lord Reay forgot, I think, that practically, as Mr. Fernandez has explained, the Survey officers owe their success to their never having allowed themselves to be drawn into the logical results of calculations on theoretical bases, but have always checked their results by a comparison with facts. They have ascertained what the people were paying previously and rectified their proposals accordingly. If, for instance, after carefully classifying the fields of a táluka they found that the scale of rate which they proposed (and which by comparison with others elsewhere seemed fair enough), brought out a total sum to be paid enormously in excess of what the people had been accustomed to pay, their own mother-wit came to the rescue. They said, " the táluka cannot *bear* this amount. We must cut down the rates and bring them down to what the people, we feel assured, *can* pay." Their moderation and sense, and the fact that, even though the total revenue was enhanced, all paid proportionately to the ascertained value of their fields instead of at haphazard rates as before, and that the increase was spread over all except those who had been over-assessed previously, made the settlements a complete success. I have known that distinguished Survey officer, General Anderson, go over the lists of fields in villages and actually reduce the assessment on individual fields, where he found that his rules of classification and the rates he had imposed brought out results higher than he deemed prudent. Theory in fact in the Survey has always been subordinated to the practical results to be brought about.

7. Acting, therefore, on the principle under which soil rates are kept down by the results they work out to, the Survey officers as a convenient way of calculating it, more than anything else, spread the loss of well revenue over water-bearing lands by a percentage increase on the soil rate and limited the amount of the new assessment to the share lost by the old. This led to discrepancies in the subsoil water rates between different tálukás, it is true, but these discrepancies were not so startling as might any day have been found in the soil assessment of fields of apparently the same value in *every* respect in different tálukás. Lord Reay forgot also that the ascertaining of the capabilities of land in the matter of subsoil water, was for the reasons stated above in paras. 2 and 3 very difficult, and he did not, I think, sufficiently appreciate the advantage of attaining to generally satisfactory results in assessing the cultivators, no matter whether *strict* theory was followed or not. On the other hand, I myself when, as Collector of Ahmedabad, was criticising (I now believe somewhat intemperately) the revision proposals for Daskroi, did, as far as I remember, find fault with the increases put upon certain dry-crop villages, and I alluded to the hardship, as I put it, of their having to pay in addition to rates which I thought too high a water rate for water which they did not use, while the owners of land in the rich well-owning villages in Ahmedabad found themselves by the abolition of the well assessment paying less revenue than before, and this result seemed to me unfair. Lord Reay therefore, in his extreme anxiety to be just and true to principle, desired Colonel Godfrey to make out fresh proposals for taxing subsoil water.

8. Colonel Godfrey went into the matter and proposed a low scale for uniform adoption. He went on the principle that all the relative value of the *soil* of fields amongst themselves was all settled by the careful and elaborate classification of soil, its faults, such as khár or destructive salt, distance from the village, liability to flood, &c., and for its advantages such as fertility, the presence of certain fertilizing silts, roads, villages, &c., which over forty years' experience has given to the Survey Department. The maximum assessment to be placed on the fields generally rested on the grouping of the village according to its advantages, kept down by the need of not assessing too highly. Therefore, he argued, the *water* in a field is a constant quantity wherever it be found and should be assessed at a constant rate, according to its sweetness, abundance of supply and depth from the surface . In other words, he followed what I may call the water-company theory. Colonel Godfrey proposed Re. 1 as a maximum, and showed that when the scale was applied to villages and actually worked

out, it gave excellent and moderate results. In several tálukás and villages to which he applied it, the subsoil water assessment came pretty much to the well revenue and the results were much the same as those of the Dholka percentage scale. He explained the matter fully at the conference held by His Excellency Lord Reay at Ahmedabad, to which I have already alluded and we all accepted it. Government therefore sanctioned his scale (Government Resolution No. 2282, dated 29th March 1890).

9. I was afraid at the time that Colonel Godfrey's ignorance of Gujarát might lead to difficulties later; but the results were so good, I did not see any need of questioning Colonel Godfrey's new scale, especially as it was the work of a very experienced Survey officer. But in the Revision Survey assessments both of Viramgám and Gogha, both tálukás notorious for the bad water supply, the area assessed under the scale was very large and I think (not having the papers by me) that the Deputy Superintendent and I both recommended that in those tálukás the 4th class salt water (which is really damaging to the land, though it will raise rice and coarse barley) should be made a present to the cultivators. I suggested also on my own account that the Superintendent of Survey should be allowed to vary the maximum rate for water just as he varied the maximum rate for soil.

10. I am still of opinion that that is the best plan. Mr. Ozanne's policy, though I daresay I have failed to follow him, is not clear. In one para. (12) he would make the subsoil water a mere incident of soil classification, such as a stream in which a dhekudi can be placed. (This plan I see commends itself to Mr. Fletcher.) In para. 18 Mr. Ozanne would treat it like rice water, which in Gujarát (except where there is very little rice in a village) is assessed separately from the soil altogether at a maximum rate in each village and classified according to the position of the fields. I do not agree with one remark of Mr. Ozanne's that "the rent charge should vary with the net profit," for it was the attempt to ascertain the net profit and take a share of it that led to the failure of Mr. Pringle's survey. But it seems to me that subsoil water is not the constant quantity that Colonel Godfrey thinks. I would, therefore, cause the Superintendent, as now, to examine it everywhere, and propose what rates he pleases, showing the results in his report.

11. How then can His Excellency Lord Reay's objection be met, viz., that this means an unjustifiable difference in the treatment of the same product? Why should a first class sweet-water tract, in Broach, say, be assessed at Rs. 3 for subsoil water which is within the bounds of possibility, while precisely similar water in Gogha may be assessed at 8 annas or 4 annas or 2 annas? Because the circumstances of the two tracts are different. In Broach the water is more valuable, its existence is known and it can be relied upon with much more certainty than in Gogha. In Broach we can take pretty well its full value. In Gogha it is more rare and uncertain and we want to encourage the cultivators to use it. We tax it in Gogha at next to nothing, in the same way that we tax rich waste lands very low to induce people to take them up. Colonel Godfrey will say, "But the difference in the rates of waste was allowed for in the classification of *soil* (*e.g.*, the cost of clearing it) and in the maximum rates." The rejoinder to this is "not entirely, as regards subsoil water at least." If a waste tract had as good water as Broach, but to induce its cultivation we put Re. 1 an acre soil rate on it instead of Rs. 10 the rate in Broach, we should fly in the face of our own policy if we also put Re. 1 (Colonel Godfrey's best water rate) for water on each. We should thereby add to the rent of one field 10 per cent. and to the other 100 per cent. and directly discourage the taking up of the waste land. As both Mr. Fletcher and Mr. Younghusband have pointed out, the maximum rate should be modified according to *all* the factors of a field's productiveness, not omitting the factor of subsoil water only. Their reasoning is, it seems to me, sound, as far as it goes. But after all, the question is only the best means of obtaining a certain end. Surface water dammed up for rice is of sufficient importance to be classed and assessed separately. "Why then," Colonel Godfrey will argue, "should not subsoil water be treated in the same way? If Messrs. Fletcher and Younghusband's arguments were carried out to the full, "rice water should be also a detail of classification." As a practical working scale

indeed with a maximum of Re. 1 per acre Colonel Godfrey's scale, especially as it worked out well, seemed to me fair enough, too high perhaps for some places, and too low probably for others, but on the whole one that would be likely to answer. Without finding any fault with it, I would now say that experience shows it inadvisable to make it immutable and discretion must be given to vary it as occasion requires.

12. This plan has the merit of meeting His Excellency Lord Reay's objection that a percentage increase on the land revenue is not the proper way of levying the water cess, though even that is not so faulty as it seems. For, *on the whole*, the best land will, I am inclined to think, be generally found in Gujarát to go with the best water and a small percentage rise all round on account of subsoil water is not severe upon any one. But, I think, looking at the matter as a matter of practical administration, by far the best plan will be to allow the Superintendent to fix his own maximum rates for subsoil water of different orders, and I would certainly give him great freedom in exempting from assessment lands where the water is known to be very bad and salt, or even liable to become so. I think that since the scale was adopted there has been a tendency to hunt for and assess subsoil water over far larger areas than the facts warranted. Viramgám suffers from rather scanty rain and the subsoil water is so abominably salt that a water-supply for the town has not yet been devised, yet almost the whole or at any rate a very large portion of the táluka was assessed for the so-called advantage of subsoil water. I would, as a rule, restrict the imposition of the cess to tracts where really good wells could or might be common, and in tracts where sweet wells are liable at any moment to become briny, I would keep the rate very low. It must not of course be forgotten that the larger the area over which the tax, based on the proceeds of the well tax, is taken, the less is the incidence, so that I would not restrict the Superintendent too much in this respect; but I would keep in view the desirability of imposing the cess only upon those tracts where the advantage is really a sound and substantial one.

13. The proposal to make the presence of subsoil water a mere advantage to be allowed for in the classification would very possibly answer, but I am not in favour of it. I think that it is of importance to know the area of land classed for subsoil water, just as we do the area of land classed for rice and also to ascertain the exact sum levied for it, in order to prevent over-assessment. Treating it as a mere advantage, Government would never know the area and assessment levied, and it is important that the information should be on record.

14. The question seems to have become somewhat complicated by the fact that Government have of late years tied their own hands in the matter of percentage increases at revisions of assessment, a policy which with all respect I can never think was altogether judicious, as it prevents Government realizing in full the legitimate increases of land revenue which will follow the construction of railways and communications. The policy, however, has been promulgated and there is nothing more to be said about it. But one of the results has been that in many cases after a revision has been undertaken, when the Survey officers came to distribute over the land the normal increase in assessment decided upon for the táluka, it was found that the addition of the subsoil water has increased the enhancement above the limit allowed. In this case either the soil or subsoil water assessment has apparently to be remitted, and Mr. Fernandez is always proposing to reduce an excessive enhancement by lowering the subsoil water assessment. My own impression is that this is not necessary. *Both* assessments should be imposed on the field according to rule, and then if the legal increase is exceeded, the surplus must be remitted in fixing the final assessment. There is no more reason why the deduction should be made out of one component part of the assessment than out of the other.

Extract paragraphs 1 to 4 and 9 of the Survey Commissioner's report No. 1478 dated 12th August 1891, submitting remarks on the above correspondence.

I am now in a position to submit the report and explanation called for in Government Resolution No. 3893, dated 8th June 1891.

4. As regards the subsoil water question, I think that Colonel Godfrey's system has been shown to be unsound in theory and unworkable in practice. I took it upon myself to obtain the technical opinion of Mr. Fletcher. This opinion is now submitted with that of Messrs. Fernandez and Younghusband. During the interval which has elapsed since the issue of the orders of Government in the Resolution under reply, I was compelled to pass orders regarding the subsoil scale to be applied to the Parántij Táluka. I append copies of the correspondence which has passed on this subject between Mr. Fernandez and myself, because it has resulted in the preparation of a scale for assessing the subsoil water facilities of Parántij, which it is hoped will be applicable to other parts of Gujarát. In order that this scale might be weighed in the light of its practical application to tálukas already settled under other scales, I have called upon Mr. Fernandez for a special statement [see para. 2 of my letter, dated 28th July]. This statement has not yet been received, but I may, as regards the suggested scale [which, of course, I have ordered to be applied subject to the sanction of Government in order to prevent a loss of revenue by the delay in settling Parántij], make the following explanatory remarks :—

[1]. I have eliminated all depths below 40 feet, for I do not think that water at that depth can be obtained " easily ;" in other words that a facility for well irrigation does exist, though wells may be made and profitably worked.

[2]. I have introduced a variation of the scale in order to graduate the charge according to the quality of the soil.

[3]. The scale is a classification scale and the charge for water will vary, as it should vary, with a maximum rate.

[4]. The scale is totally irrespective of present well revenue.

[5]. It eliminates all charge, except in rice land, for water of the 4th order, that is, brackish water which is only used to raise rice seedlings when the rainfall is late, and occasionally to grow a poor barley crop when the rice land has lain fallow.

The materials are at hand for applying this scale both to Sánand and Gogha, and I suggest that it should be so applied with such modifications as Government may be pleased to make. I have hesitated to give this order myself, lest modifications should be ordered which would increase cost by necessitating recalculations, but if the principles which now have been almost universally accepted are also accepted by Government there can be no doubt that this step should now be taken.

5. I append extracts from a memorandum written before Colonel Godfrey's scale was published, when I was acting as Survey Commissioner in Baroda, on the subsoil water question. In it I contended, as I contend now, that the duty of the Survey Department is not to value land, but to make a relative valuation which will make the burden of the land-tax as equitable as it can be made with the means employed. All the subordinate operations of the Survey Department are guided by these principles, and it is not a fair criticism on the Department that its valuations are not such as would be made by land valuators in other countries. If the Department were to seek to go further than it does, the expense would be prohibitive, and I doubt whether the final result would be more satisfactory.

6. The difficulty which Mr. James points out in the concluding remarks of his 3rd para. is one which has to be faced in many details of classification. The classers must work by rule of thumb. It is the duty of the Superintendent to discount the results obtained early in the season, when the appearances are more favourable than in the hot months, and the Superintendent is not likely to forget or overlook the conditions under which the classing is made.

7. Mr. James was [see his para. 9] misled by the apparently good results as shown by Colonel Godfrey's exemplifications of the effect of the application

of the scale, but as Mr. Fletcher has pointed out [his para. 9] these exemplifications were misleading, because Colonel Godfrey had not the requisite data to work them out with accuracy.

8. Mr. James's [para. 12].—There will be no difficulty in working out the financial effect of the subsoil water assessment, if it is treated as a detail of classification. Such calculations cost money, and if called for with respect to one item of classification ought to be called for with respect to others, *e. g.*, position class. It would be very interesting if the effect of all the items of classification were thus separately exhibited, but this would add considerably to the cost of compiling the Settlement Report.

9. I would suggest to Government that it would be a good plan if the whole of the correspondence regarding the subsoil water question is printed separately in the form of a separate compilation.

APPENDIX.

Note by Acting Survey Commissioner, Baroda, on the subsoil water assessment.

To the Superintendent, Baroda Survey.

I have the honour to place the following remarks on paper regarding the introduction of something like the subsoil water classification of the Bombay Survey into our Survey. * * *

2. * * * In introducing a subsoil water assessment the object is not to recoup the loss from the abandonment of direct well taxation but principally to differentiate between lands which have facilities for irrigation, where irrigation will be profitable, and where it would be unprofitable or positively harmful owing to the danger of bringing up salt in the irrigation water; and again between lands which have not the facility for irrigation and those which have, provided the water is not salt and useless. In fact, we have to solve the problem of fair distribution, which is after all the great problem at the bottom of all survey operations.

3. I look on the question of a subsoil water assessment, then, as a question of classification and of classification alone. And the question is whether our classification rules are sufficient to differentiate between the classes of land described above and similar kinds of land. I think that you will agree that the application of the rules does not meet the cases we have to deal with, but that it will not be difficult to apply them so as to meet the difficulty, even with perhaps hardly perceptible modifications.

4. To make my meaning plainer, take the case of two tracts of black soil of full depth, of even surface, and in all points similarly classifiable under our present rules.

There may be two points of difference:

(*a*) In one tract, though no salt may be apparent in the surface soil, to a depth of three feet, yet it may be that wells tap a stratum of salt, and that if irrigation is attempted it will be either harmful or only useful for barley. In the other the wells have sweet water, and irrigation is most profitable, and perhaps the tract may be covered with kacha wells.

(*b*) In the one the general level of the soil may be high and water too deep for profitable utilization. The tract may be upland, of good deep soil and there may be no danger of salt. In the other the lie of this land is low; the water strata are close; wells may be cheap and water brought to the surface after little expenditure.

Now, under the rules practically I think in both cases the soil classification would be the same, and yet it does not require much argument to prove that in fairness and in solving the problem of fair distribution of the Government demand, a real difference should be made. Neither in ordinary classification can we with the material at our command and within an expenditure which is reasonable, nor in the special cases which I am trying to indicate, do more than make

an approximation to the relative productive capabilities of the soils. But such an approximation is near enough for the practical problem with which we have to deal. We cannot dig test wells to find out the depth and character of the water underlying. We cannot use the diviner's rod, but we can as practical men use the evidence of existing wells and other evidence available, make a difference in the valuation which for practical purposes is sufficient. We know that our information is not full, and so, as in all cases of classification, we have to leave a margin for error and insufficient knowledge, and yet we feel that our action is called for in the interests of the tax-payer, so that the burden of the assessment should fall as evenly as possible on the different kinds of land and as fairly as possible. We must use the local knowledge of the people, and though in cases of this kind that information must be received with caution, for many reasons it must not be ignored, but must be utilized by the Assistants, though no discretion can be allowed to classers. With your experience as a classer you will bring more cases to mind than the one I have indicated, but I have said enough to show how I look on the question.

(Signed) E. C. OZANNE.

Baroda, 25th November 1889.

No. 467 OF 1891.

To

THE SURVEY AND SETTLEMENT COMMISSIONER.

Surat, 22nd July 1891.

SIR,

With reference to your endorsement No. 1333, dated 20th instant, on Mr. Fletcher Superintendent Deccan Survey's opinion on subsoil water classification, I have the honour to submit herewith a scale which I have framed, paying special attention to that officer's remarks in his paras. 10 and 11.

2. In the plains of Gujarát utilizable subsoil water is usually found under gorat and besar soils only, the maximum classification of which ordinarily is 14 annas. Wherever pure black soil prevails there, as a rule, the underground springs are salty owing to which wells are conspicuous by their absence. Taking these facts into consideration and the further one that the best garden produce requires a certain amount of consistency in the soil which is caused by the presence of loam, I have fixed the first grade of soil at from 16 to 11 annas. The other grades call for no explanation.

3. In your remarks on my Sánand Report you have agreed with me as to the unfairness of taxing salt water of the 4th order in connection with jiráyat land. The scale for this order of water has therefore been made for rice land only. As the soil classification of rice lands practically runs from 5 annas to 8 annas only, soil grades for rice seem unnecessary. I have therefore not made any. It will be seen that the scale is the same as that for the first grade of soil under Order III. The reason of this is that rice crops can as effectively be saved by water of the 4th order as by that of the 3rd, and in the cold season both are used in rice lands for raising crops of barley and occasionally of wheat.

4. The scale as framed will, I think, suit all inland tálukás which have no rocky substratum. Those with rocky substratum should have the scale lowered according to their special circumstances. In the case of tracts containing soil of the superior order, which is classable up to 24 annas, and in that of the coast tálukás like those of Bulsár, Jalálpur, &c., where owing to the greater humidity

in the atmosphere garden produce is raised with much less trouble than in the dry tálukás inland, it may perhaps be found necessary to alter the scale to make it suitable to the new order of things.

5. As regards the táluka of Paráńtij, the revision proposals for which are due next cold season, I am of opinion that the two divisions of Paráńtij proper and Modása should be treated differently, because, while the former has no rocky substratum, in the latter it prevails throughout. Moreover, the Modása underground springs are weak and consequently there are but few wells indeed which can be worked the whole day without being exhausted. Further, the level of the springs sinks several feet in the hot weather leaving the wells in the high localities nearly dry. I would, therefore, propose that for the Modása Division the scale should be reduced by one-half. As the Paráńtij Darvari is now in hand an early answer would be highly esteemed.

I have, &c.,
T. R. FERNANDEZ,
Deputy Superintendent, Revenue Survey, Gujarát.

Scale showing the Anna Value of the classes in each order of subsoil water as fixed by the depth from surface to water and the classification of the soil.

Grade of Soil.	Order I.				Order II.				Order III.				Order IV.				Remarks.
	A Class up to 10 feet.	B Class over 10 and up to 20 feet.	C Class over 20 and up to 35 feet.	D Class over 35 and up to 50 feet.	A Class up to 10 feet.	B Class over 10 and up to 20 feet.	C Class over 20 and up to 35 feet.	D Class over 35 and up to 50 feet.	A Class up to 10 feet.	B Class over 10 and up to 20 feet.	C Class over 20 and up to 35 feet.	D Class over 35 and up to 50 feet.	A Class up to 10 feet.	B Class over 10 and up to 20 feet.	C Class over 20 and up to 35 feet.	D Class over 35 and up to 50 feet.	
16 to 11 annas.	4	3½	2½	2	3½	3	1½	1	2	1½	1	½	2	1½	1	½	The scale for the 4th order of water is applicable to rice lands only. Exceptional jirayat lands which grow tobacco with the aid of salt water will be specially dealt with.
10 to 8 annas .	3½	3	1½	1	3	2½	1	½	1½	1	½	...	...	...	...	...	
7 to 5 annas ...	2½	2	1	½	2	1½	½	...	1	½	...	...	...	...	...	...	

N.B.—Soils below 5 annas of classification are not to be subjected to subsoil water assessment.

T. R. FERNANDEZ,
Deputy Superintendent, Revenue Survey, Gujarát.

Surat, 22nd July 1891.

No. 1393 of 1891.

To

The DEPUTY SUPERINTENDENT,
GUJARÁT REVENUE SURVEY.

Poona, 28th July 1891.

Sir,

In reply to your letter No. 467, dated 22nd instant, I have to say that it is absolutely necessary that the scale should be fixed for Paráńtij now, as you point out. I am prepared then to authorize your completing the darvaris without delay, to prevent loss of revenue. If Government does not sanction the scale, the darvaris may have to be done over again, but that is the lesser risk. I have consulted Mr. Fletcher, who has now studied the question, and would make the following comments on the scale proposed by you:—

(1) I am very strongly of opinion that a depth over 35 feet should not be admitted. Water may be obtainable at a greater depth profitably,

but the expense incurred in case of success and the risk of failure after expenditure on excavation make it evident that when such depths are concerned, it cannot be said that water for irrigation is "easily obtainable." I may go as far as 40 feet if you show strong reasons.

(2) I approve of the soil gradations, but think that they should be slightly altered as shown in the appended statement. If rice land is, as you say, usually classed from 5 to 8 annas, this is because 8 annas in the scale are allotted to water. A rice soil classed at 8 annas would then, if dry-crop, be classed at 16 annas. The question is whether the increase for subsoil water facilities should be based on the jiráyat valuation or on the rice valuation. I think on the latter, because though the value of well water is not so great in rice land as in jiráyat, yet the low soil valuation of rice land will practically exclude the scale for the higher soil grades.

(3) I approve of the proportion which you fixed for the soil grades with minor modifications. I think the incidence of increase should be proportionately higher on poor than on better lands, because the value of water on poor land, provided it is not bad unirrigable land, is greater, and your scale excludes all soils classed below 5 annas. Should we not say below 4 annas? for otherwise fairly assessable rice land may unreasonably escape.

(4) I think the way to that with tracts where a rocky substratum has to be pierced before water is reached, is to provide a fault, which will cause a reduction in the scale which is necessary. This method will also apply to other obstacles to irrigation from wells, *e. g.*, weakness of springs. A fault may be here defined as=½ the scale increase. Where necessary ½ a fault only may be allowed.

2. I shall be obliged if you will work out the proposed scale for a few villages, chosen as representative ones, in Dholka, Viramgám, Sánand, Daskroi and Gogha, and compare (*a*) the classification result, and (*b*) the absolute result according to the sanctioned maximum rate, and if you will submit the comparisons with your remarks and opinion.

I have, &c.,

E. C. OZANNE,

Survey and Settlement Commissioner.

No. 496 of 1891.

To

THE SURVEY AND SETTLEMENT COMMISSIONER.

Surat, 1st August 1891.

SIR,

With reference to your letter No. 1393 of 25th ultimo, I have the honour to remark as follows regarding the three clauses of your paragraph 1 :—

Clause 1.—I agree with you that the maximum depth of wells should be reduced, but I think at the same time that the limit should be reduced from 50 feet to 40 feet. If it is lowered to 35 feet then most of the wells in Nadiád and A'nand will, I think, escape the subsoil water rate, and you are aware how largely they contribute to make tobacco cultivation the great success it is. There are wells to be met with in Gujarát as deep as 60 feet which are regularly used for raising crops of wheat and barley.

Clause 2.—In respect of this clause I would remark that although rice soil is classed from 5 annas to 8 annas, in calculating the *ákar* the classifi-

cation values are doubled; for instance, 5 annas become 10 annas and 8 annas 16 annas; so it will be seen that rice soil will receive a treatment in no way different from jiráyat.

Clause 3.—In the Deccan a soil may be 7 annas and lower, but still whatever there is of it may be 1st class, for I think insufficiency of depth is one of the chief prevailing causes which there lower the valuation. In Gujarát, on the contrary, full depth is met with everywhere except in the few hilly tálukás. The chief faults that here reduce the valuation are sand and salt. To bring gorat soil down to 7 annas and below, the existence of 3½ faults and more of each of the defertilizing ingredients are necessary. In Gujarát therefore soils below 8 annas are really very poor and it could not, I would respectfully add, be said of them that the value of water on them is greater than on good lands. Soils below 5 annas are nearly all sand or salt, and I am strongly of opinion that they should not be assessed for subsoil water.

2. With regard to your para. 2 the depth details of the Dholka and Daskroi wells are not available, for they were graded under the three depths fixed by the Superintendent and approved by your predecessor. The information called for by you can therefore be furnished in respect of Viramgám, Sánand and Gogha only, and it will be submitted no sooner it is ready.

3. As I think nearly all the wells in Táluka Parántij are within 35 feet in depth, there is no reason to delay the application of the new scale to it till the point raised by me in my remarks on your clause 1st is settled. I am therefore issuing instructions to my Classing Assistants accordingly.

I have, &.,

T. R. FERNANDEZ,

Deputy Superintendent, Revenue Survey, Gujarat.

No. 1438 of 1891.

To

THE DEPUTY SUPERINTENDENT,

GUJARÁT SURVEY.

Poona, 4th August 1891.

SIR,

I have the honour to sanction the accompanying scale for the assessment of subsoil water in the Parántij Táluka including Modása, in anticipation of the sanction of Government. The sanction of Government will be asked when my final report on the subsoil water question is submitted; but I cannot wait till that time without seriously impeding the work of completing the darvari.

2. I have considered your letters Nos. 467 of 26th July and 496 of 1st August. I have agreed to reduce the depth from 50 to 40 feet. As regards your explanation as to the manner of calculating the *dhára* in rice land, I have added a note to the scale. In other respects there is no difference of opinion between the scale submitted by you and that sent for your remarks with my No. 1393 of 28th July, except the differences which I suggested in the latter scale and which you apparently approved.

I have, &c.,

E. C. OZANNE,

Survey and Settlement Commissioner.

Suggested Scale for Gujarát subsoil water additions to be made to the soil classification annas.

Soil annas.	I.				II.				III.				IV.			
	A.	B.	C.	D.	A.	B.	C.	D.	A.	B.	C.	D.	A.	B.	C.	D.
	10 feet and less.	11 to 20.	21 to 40.	...	10 feet and less.	11 to 20.	21 to 40.	...	10 feet and less.	11 to 20.	21 to 40.	...	10 feet and less.	11 to 20.	21 to 40.	...
Above 12 ...	4	3	2	...	3½	2½	1½	...	2	1½	1	...	1	½	...	..
11·11 to 8 ...	3½	2	1½	...	2½	1½	1	...	1½	1	½	...	1	½	...	...
7·11 to 5 ...	2½	1½	1	...	1½	1	½	...	1	½	...	...	...	...	...	...

A fault (=½ of addition) to be given for rocky substratum or other obstacle to construction of well and one also for deficiency in the supply obtainable.

Order IV to be applied only to rice lands.

In rice land the addition required by the above scale is that which is calculated on the soil classification annas doubled.

E. C. OZANNE,

Survey and Settlement Commissioner.

Extract paragraphs 1 and 5 of Government Resolution No. 7204, dated 20th October 1891, sanctioning proposals for the Revision Survey Settlement of the Sánand Táluka.

The receipt of these papers has now enabled the Governor in Council to consider and pass orders on the proposals for the revision settlement of the Sánand Táluka, which were first submitted, with memorandum No. 1659, dated 5th May 1891, from the Commissioner, N. D. There have been peculiar difficulties in arriving at sound conclusions, partly on account of some differences of opinion regarding the grouping of the villages, and partly on account of doubts as to the advisability of adopting the system of assessing subsoil water advantages, sanctioned by Government Resolution No. 2282, dated 29th March 1890.

5. The next question is as to the subsoil water assessment. In addition to the views expressed by those members of the 1889 Committee, on whose report Government Resolution No. 2282, dated 29th March 1890, was passed, now remaining in India, Government have had before them the opinions and conclusions of Messrs. Ozanne and Fletcher. The object of that Resolution was to get rid of the idea that the new subsoil water assessment should be equal to the old well assessment, and Colonel Godfrey's scheme was a loyal attempt to carry out this object. The application of his scheme to certain tálukás appeared to justify the conclusion that it was generally applicable, but further experience has shown that it is not so. The weight of opinion, both expert and otherwise, is so strongly against its further application that Government are justified in so modifying the orders contained in the above quoted Government Resolution as to substitute for them the scheme provisionally sanctioned by the Survey and Settlement Commissioner in his letter No. 1438, dated 4th August 1891, to the Deputy Superintendent, Gujarát Revenue Survey. This should therefore be done.

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on 31 October, 2019